FOUNDRY TRADE JOURNAL

Established 1902

WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

Vol. 85 Thursday, September 30, 1948 No. 1674

49, Wellington Street, London, W.C.2

'Grams: "Zacatecas, Rand, London"

'Phone: Temple Bar 3951 (Private Branch Exchange)

PUBLISHED WEEKLY: 26s. per annum (Home and Overseas)

Don't be Shy

The Bulletin of the British Cast Iron Research Association announces that from now onwards every ironfoundry in the United Kingdom becomes entitled to the services of the Association. The announcement is made in the following terms:—

"As a result of an arrangement made by the Joint Iron Council with the approval of the Iron and Steel Board, a substantial proportion of the Association's future income will now come from a levy on foundry pig-iron with the addition of a Government grant.

"The arrangement will not in any way affect the membership of ordinary full members connected with the ironfounding industry, but not actually engaged in the production of iron castings; or the membership of trade and user members; or the membership of associate members; or the membership of British foundries overseas, and the Council welcome their continued support. The importance of this support may be judged by the fact that, under the new grant arrangement, all subscriptions from the United Kingdom will receive grant at the rate of £1 for each £1 so subscribed up to a limit of £20,000 per annum. Voluntary subscriptions from ironfounders in the United Kingdom (over and above that provided through the levy) will be similarly treated.

"The effect of the new arrangement, which dates from July 1, 1948, will be to raise the Association's current income for the year 1948-49 by approximately one-third to one-half. By means of voluntary subscriptions the total income can be raised still further towards the figure of £100,000 per annum regarded by the Council as necessary if the Association's usefulness to the industry is to be fully realised.

"The Council is being reconstituted to meet this change, details of which have now been communicated to all classes of members and, as far as practicable, to all ironfoundries in the United Kingdom. Omissions should be reported to the Secretary of the Association.

"On behalf of the Council we take this opportunity of expressing our thanks to the Joint Iron Council, comprising the Council of Iron Producers and the Council of Ironfoundry Associations, and to the Department of Scientific and Industrial Research for making this change possible. In thanking our old members for their past support, we would say that with increased resources the Association should go on from strength to strength. To new members we offer a warm and cordial welcome and express the hope that they will participate as actively as possible in the Association's work. The present position of the Association has been brought about by devoted work over a quarter of a century. Its future is indeed bright."

Many of our readers will be wondering just how they can avail themselves of the services now open to them. We counsel them to write to the headquarters of the Association at Alvechurch for permission to visit the laboratories. There they will have the opportunity of seeing the equipment and the type of work in progress. They will be able to discuss their problems with the staff and thereby establish a liaison. The strength of this will be reinforced by intelligent co-operation. It should be remembered that the more one puts into any organisation the greater the personal benefit. The fact that an organisation is small must be no deterrent to co-operation. The Association well realise that the smaller concerns have but a minimum of technical control, yet help can be given through

(*Continued overleaf.*)

Contents

Don't be Shy, 311.—Institution of Production Engineers, 312.—Caddies for York, 312.—Forthcoming Events, 312.—The Cleaning of Steel Castings, 313.—Some Fundamental Problems in Foundry Planning, 321.—Zinc Melting Pots, 325.—New Catalogue, 325.—Book Review, 326.—British Standards Institution, 326.—Production and Distribution Census, 327.—Mechanisation in British Industry, 327.—House Organs, 327.—Pig-iron and Steel Production in Great Britain, 328.

Don't be Shy

the development department in overcoming some of their major problems. It may be that some at least of these problems are common to many small jobbing shops. Should this be so, then all the not inconsiderable facilities of the research association would be set in motion for their solution. However, now that they are free to participate in the activities and resources of the B.C.I.R.A. they must become research-minded in respect to their own particular activities. Though it should be unnecessary, we think it desirable to suggest to all the smaller organisations within the foundry industry the following precept: "Don't be shy!"

Institution of Production Engineers

The first national convention of this Institution, which now has 8,000 members, was held last week in Bournemouth. It opened with a dinner at which the principal speaker was General Sir Bernard Paget. He detailed the scheme of the realistic training of the infantry in preparation for D-day for which he was responsible, and suggested that analogous methods could be used in industry. The Convention proper was opened with the Presidential Address by Dr. H. Schofield, the principal of the Loughborough Technical College. This was followed by an address by Sir Ernest Fisk, managing director of Electric & Musical Instruments, Limited. The afternoon was devoted to Group discussions. The day was concluded with a civic reception and dance.

On Saturday morning, the meeting was given over to hearing Lt.-General Sir Ronald Weeks speak on the future trend of industry. So successful was this Convention that there is every likelihood of it being an annual fixture.

Caddies for York

The Secretary of York Golf Club, Strensall, now informs us it *may* be possible to get a limited number of caddies or, to describe them more correctly, bag carriers, for the Institute's Golf Meeting on October 15. They will be allotted in the order of entry for the competition, so will members please send to Mr. F. Arnold Wilson, c/o Wm. Jacks & Company, Limited, Winchester House, Old Broad Street, London, E.C.2, a note as to their wishes.

MR. FITZHERBERT WRIGHT, president of the Joint Iron Council, will officially open the first Foundry Training Centre at Swan Village, West Bromwich, next Wednesday, at 3 p.m.

THE FOURTH Empire Mining and Metallurgical Congress is to be held in Great Britain in July, 1949. The first was held during the Wembley Exhibition in 1934; the second and third in Canada (1927) and South Africa in 1930.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

Institute of British Foundrymen.

OCTOBER 1.

West Wales Section :—"Loam and Dry-Sand Moulding," by D. Robertson, at Glanmor Foundry Canteen, Llanelly, at 7 p.m.

OCTOBER 2.

Wales and Monmouth Branch :—"Loam and Dry-Sand Moulding," by D. Robertson, at the Engineers' Institute, Cardiff, at 6 p.m.

OCTOBER 4.

Sheffield Branch :—Presidential Address by H. S. W. Brittain, followed by a Smoking Concert, at the Royal Victoria Station Hotel, Sheffield, at 7.30 p.m.

OCTOBER 5.

Slough Section :—Visit to D. & P. Film Studios and Foundry at Denham. Assemble at main gate of High Duty Alloys, Limited, at 2 p.m.

OCTOBER 6.

Institution of Production Engineers.

Sheffield Section :—"Steel Production—Some Facts and Problems," by L. Chapman, at the Royal Victoria Station Hotel, Sheffield, at 6.30 p.m.

OCTOBER 7, 8 and 9.

Institution of Incorporated Plant Engineers.

First Annual Conference at Cheltenham Spa, under the Chairmanship of L. G. Northcroft, B.Sc., M.I.Mech.E.

OCTOBER 8 and 9.

Association Technique de Fonderie

Twenty-second *Congrès de Fonderie*, at the premises of the *Société des Anciens Elèves des Ecoles Nationales d'Arts et Métiers*, 9 bis, Avenue d'Iéna, Paris, 16e. Details printed in the JOURNAL, August 26.

OCTOBER 8.

Royal Statistical Society—Industrial Applications Section.

London Group :—"Quality Control Charts in Costs and Productivity Analysis," by G. F. Todd, at the E.L.M.A. Lighting Service Bureau, 2, Savoy Hill, London, W.C.2, at 6 p.m.

OCTOBER 9.

Institution of Production Engineers.

West Wales Sub-section :—Sound film. "The Production of High Quality Steel," by J. H. Jones, at the Technical College, Swansea, at 7.30 p.m.

Institute of British Foundrymen.

Lancashire Branch :—"Problems of Contraction and Distortion in Iron Castings," by E. Longden, at the Engineers' Club, Albert Square, Manchester, at 3 p.m.

Newcastle-upon-Tyne Branch :—Visit to the works of the Consett Iron Company, Limited.

Scottish Branch :—Presidential Address by W. Y. Buchanan, followed by "Foundry Drying Systems," by J. B. Morton, at the Royal Technical College, Glasgow, at 3 p.m.

West Riding of Yorkshire Branch :—"Brains Trust," at the Technical College, Bradford, at 6.30 p.m.

KODAK LIMITED are organising a series of exhibitions designed to show the application of photography to scientific and industrial developments. They are to be held in Newcastle, September 20 to 24; Liverpool, October 4 to 8; Nottingham, October 18 to 22; Cardiff, November 1 to 5; and Cambridge, November 15 to 19. Admission is by ticket, obtainable from the Industrial Sales Division, Kodak Limited, Kingsway, London, W.C.2.

The Cleaning of Steel Castings*

Improved Conditions for Fettling

By A. B. Lloyd, B.A., A.M.I.P.E.

(*Continued from page* 296.)

V. WORKING CONDITIONS IN THE FETTLING SHOP

Much has been said and written, during the last few years, on the subject of the danger to health of fettling-shop operatives, working year after year in a dusty atmosphere. A lack of knowledge of the dangers, both on the part of foundrymen and medical practitioners, has led to premature loss of life and impairment of health of fettling-shop operatives in this and other countries.

On the medical side, all that need be said here is that a regular medical examination of fettling-shop operatives, which includes X-ray examination by medical practitioners experienced in the diagnosis of industrial lung-diseases, can ensure that any operator showing signs of developing lung trouble, owing to dust, can be taken out of the fettling shop before his health and well-being are in any way impaired.

The onus is on the foundrymen, as far as possible, to find ways and means of trapping all dust at its source, and, in so far as this is not practicable, to provide adequate personal protection for operators working on, or adjacent to, dust-raising operations.

Foundries which have installed Hydro-Blast plants have, for the most part, found that the saving in time, as compared with pneumatic "mucking," is not sufficient to justify the cost of installation of the Hydro-Blast plant unless substantial quantities of sand be reclaimed in a fit state for re-use in the foundry. The purely financial aspect is, however, largely outweighed by the health aspect. Not only does the Hydro-Blast plant wet down, at the source, all the dust that it creates, but also the humidity engendered in the fettling shop atmosphere has the effect of laying a considerable amount of suspended dust, thus improving considerably the working conditions in the vicinity of the plant.

While suggestions have been made, from time to time, regarding the extraction of dust from the point of a pneumatic chisel, the Author has not, so far, seen any workable method devised. The position remains, therefore, that pneumatic hammer operators, chipping anything but pure metal, must, in their own interest, wear some form of protective respirator.

In this connection, considerable difficulty has been experienced in devising a respirator which traps 100 per cent. of the dust drawn into it on the filter, and also enables the wearer to breathe freely. Two respirators are, however, on the market which fettling-shop operators can wear comfortably throughout the day, and, which trap on the filter 95 per cent. of the dust entering them. While, therefore, executives should continue to strive for a respirator which achieves the ideal and traps *all* the dust, an operator wearing the former type of respirator is unlikely to inhale sufficient dust, during the course of a normal working life, to cause any impairment of his health.

To illustrates the importance of providing personal protection for certain classes of foundry operators, particularly knock-out men and fettlers, steps have been taken to find out the concentration of dust in various parts of the foundry, in the general offices, and in open country, for the purpose of comparison. A large number of instruments is now available for this purpose, and full information is obtainable regarding them in the two papers[7,8] quoted in the bibliography. The instrument used for this survey, from which the photographs included in this paper were taken, was the Watson Konimeter. In this instrument, 5 ml. of air is drawn by vacuum into a chamber through a fine jet. The jet of air impinges on to a glass plate covered with a sticky substance. The dust

FIG. 12.—TUMBLAST PLANT, SHOWING SKIP-HOIST READY LOADED WITH A NEW CHARGE, AND BARREL DISCHARGING CASTINGS INTO A CONTAINER

*Presented at the London Conference of the Institute of British Foundrymen, June, 1948.

Cleaning of Steel Castings

adheres to the plate, which can be turned and the dust sample brought into the field of view of a microscope. The plate can be removed from the instrument, and the dust samples micro-photographed for record.

Six photographs, at 90 magnifications, of dust, taken with this instrument, are given in Fig. 17. Of these photographs, four were taken in the foundry and two outside for purposes of comparison. A study of these photographs illustrates the heavy concentration of dust existing on a foundry knock-out and in the fettling shop adjacent to fettlers digging into cores or chipping burnt-on sand. These photographs give a good indication of the directions in which investigations must vigorously be pursued to improve fettling-shop working conditions, and also indicates the jobs on which personal protection devices, in the form of respirators, should be worn.

These photographs also produce evidence that really serious concentrations of dust seem to exist only in the immedate vicinity of the process creating the dust. The problem, therefore, which has to be solved consists as much in trapping dust at the source at which it is created as in ventilating the fettling shop as a whole. In shotblast plants, dust is removed from the chamber by means of an induced draught, which, incidentally, causes a negative pressure in the chamber in comparison with the atmosphere. Little dust, therefore, can leak out between the walls of the chamber if the extraction fan be operating efficiently. Operators in compressed-air plants must wear a helmet with a piped supply of clean air to enable the operator to breathe, but airless-plant operators, being outside the shotblasting chamber, need no special personal protection.

VI. DUST EXTRACTION PLANT

Dust extraction filter plants are manufactured both of the dry and wet type.

(a) Dry-type Dust Arresters

The dry-type dust arrester, illustrated in Fig. 18, consists of a raised steel cabinet into which the dust-laden air is drawn by fan suction. The air first enters a settling chamber where the heavy particles of dust settle, by gravity, into a hopper below. Finer dust is then carried through a series of long, circular dust tubes, the air passing through the fabric whilst the dust remains on the inside of the fabric, pulled by gravity into the hoppers below the steel cabinet. The fabric tubes are suspended by hooks from supporting frames which can be oscillated to cause vibration, thus removing adherent dust.

(b) Electrostatic-type Dust Arrester

Fig. 19 illustrates a type of plant which is proving very successful on the Continent and is well worth consideration. Owing to its design, the pressure loss is very small—approximately ¼ in. w.g.—with a power consumption of 5 k.W. for a unit capable of handling 21,000 cub. ft. per min. of air from shotblast chambers.

The dust precipitator is of the horizontal type, the gases passing in a horizontal direction between rows of positive and negative electrodes, the object of this being that when the dust is precipitated out of the gas stream it falls away from the stream, and is not kept in a constant state of disturbance as is the case with the vertical-unit type. Arrangements of positive and negative electrodes are such that these can individually be rapped continuously to keep the electrodes clean and thus ensure high efficiency in operation. The negative electrodes are in the form of rods connected to frames, whereas the positive electrodes are in the form of flat plates of a small size, fitted in rows to facilitate rapping. The voltage applied to the negative electrodes is supplied from an electrical set comprising a step-up transformer, rectifier and control panel with auxiliaries such as resistances, warning devices, relays, etc., and the discharge is in the neighbourhood of 45,000 volts.

(c) Wet-type Dust Arrester

Dust arresters of the wet type have an advantage over the dry type in that the collected dust is delivered into a settling tank in the form of a sludge, so that a cloud of dust is not raised as happens with the screen-type arrester when canvas bags are emptied. They are, however, vulnerable in the event of severe frost.

FIG. 13.—19 FT. DIAM. TURNTABLE SHOTBLAST PLANT. CASTINGS ENTERING CHAMBER ON R.H.S., CLEAN CASTINGS EMERGING ON L.H.S.

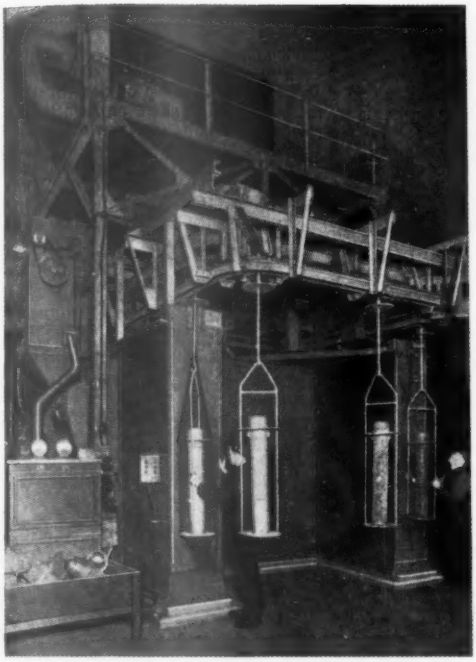


FIG. 14.—SUSPENDED-HOOK TYPE OF PLANT. CASTINGS ENTERING BLASTING CHAMBER ON R.H.S. AND EMERGING ON L.H.S.

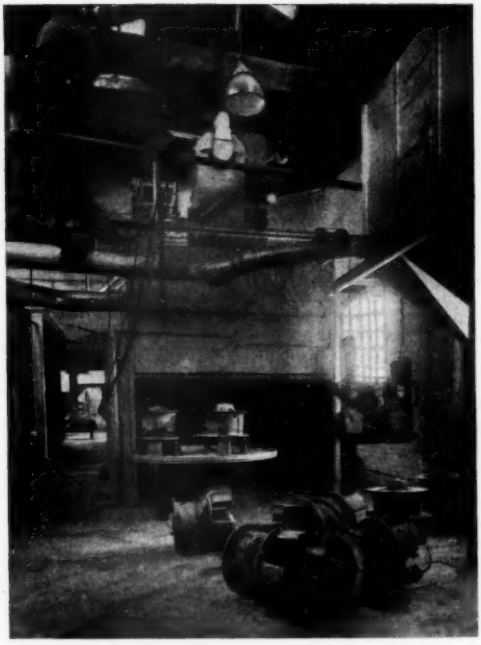


FIG. 15.—6 FT. DIAM. SWING TURNTABLE, SHOWING CASTINGS ON TURNTABLE SWUNG OUT OF CHAMBER READY FOR OFF LOADING.

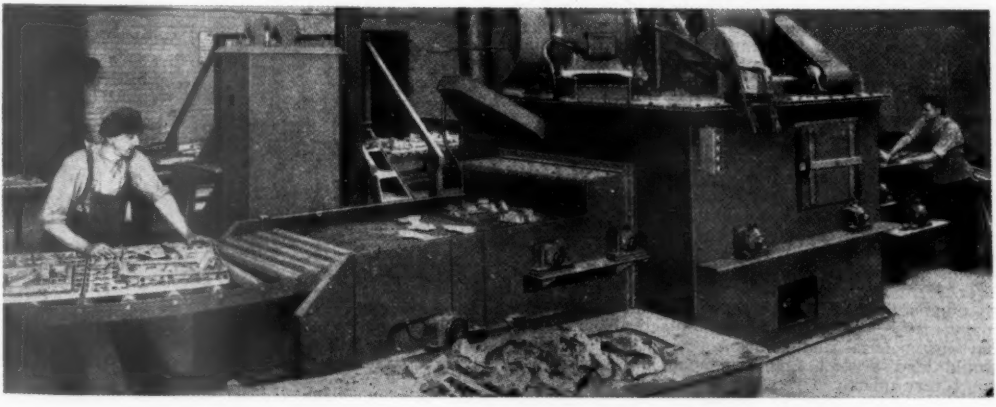


FIG. 16.—CONVEYOR-TYPE OF PLANT SHOWING CASTINGS ENTERING THE BLASTING CHAMBER.

Cleaning of Steel Castings

Fig. 20 shows a diagrammatic layout of the Traughber type of wet filter. The principle on which a wet filter operates is as follows:—The dust-laden air is drawn into the filter from the processing plant by means of a fan positioned on the discharge side of the filter chamber. The filter chamber is of rectangular section, and so arranged internally to ensure that the dust-laden air, on first entering, is deflected downwards by means of a baffle, or impinger plate, with the object of removing heavy dust. The course of the dust-laden stream is then directed upwards by further baffle plates to pass through an atmosphere of mist and spray, created by a rapidly-rotating roller impinged upon by a thin stream of water. The stream is then re-directed downwards and then up again through a second mist and spray atmosphere, and allowed to expand to pass through, in sequence, with reduced velocity, a froth floor and a tower-ring floor. The air, now well cleaned, passes through to atmosphere, the bulk of the dust having been removed and deposited in a settling tank, or hopper, at the bottom of the chamber.

(d) Concluding Remarks on Dust Arresters

It can safely be stated that the last word has not yet been said of what is the ideal type of dust arrester, and it would be premature to express an opinion as to which type holds out the best hope for future development and improvement in design. Let both dry and wet types continue to compete with each other, since it is by competition that industry will get the best answer.

VII. CONCLUSIONS

Although the title of this Paper is "The Cleaning of Steel Castings," a considerable amount of space has been devoted to the discussion of moulding-sand practice. This part of the Paper does not constitute a digression from the main theme, since the work which the fettling shop has to do is largely predetermined by what happens in the foundry. It is an old steel foundrymen's saying that "casting should be made in the foundry and not in the welding pen." The Author decided, therefore, that his first task was to study the conditions which must apply in the foundry, if the fettling shop is to operate economically, and, more important still, is to be a place in which men can work in a clean atmosphere.

The way to achieve these objectives is to make castings in such a way that the sand and casting part company readily. This condition is far more important than the siliceous content of the moulding materials used. In most steel foundries, keeping the fettling shop in balance with the foundry is a serious problem.

There are two methods of approach to it. The first is to double the size of the shop and engage twice as many men. Apart from being impracticable in these days of material and labour shortage, such a policy would land a steel foundryman in the bankruptcy court very quickly. The second is to decide that the plant available is adequate for the purpose and that the bottleneck can be cleared by control of raw materials, supervision of foundry processes, and a high standard of "good housekeeping."[9]

The latter policy will always pay big dividends in any foundry, particularly if it be combined with a policy of plant development which provides for the adoption of new methods when such new methods can be proved to show better results in terms of output per man hour.

In conclusion, the Author wishes to acknowledge the valuable work done by his collaborators—Mr. G. T. Hampton, Mr. C. Nelson, and Mr. J. H. Rendall—in supplying information and collecting data. He also thanks the directors of F. H. Lloyd & Company, Limited, for permission to offer the Paper for publication.

BIBLIOGRAPHY

7 Goodall, K. L., "Physics and Protection against Industrial Dust,' *Journal of Scientific Instruments*, Vol. XIX, No. 3, p. 33, March, 1942.
8 Green and Watson, "Physical Methods for the Estimation of the Dust Hazard in Industry," Medical Research Council, Special Report Series No. 199 (London H.M. Stationery Office, 1935).
9 Report of Joint Advisory Committee on Conditions in Iron-foundries (H. M. Stationery Office, 1947)

DISCUSSION

Sand Recovery

MR F. J. WILLIAMS, discussing sand recovery after castings had been subjected to Hydro-Blast, said that

FIG. 18.—ILLUSTRATION OF DRY-TYPE DUST ARRESTER. PART OF THE OUTER CASING REMOVED SO THAT THE DUST TUBES MAY BE SEEN.

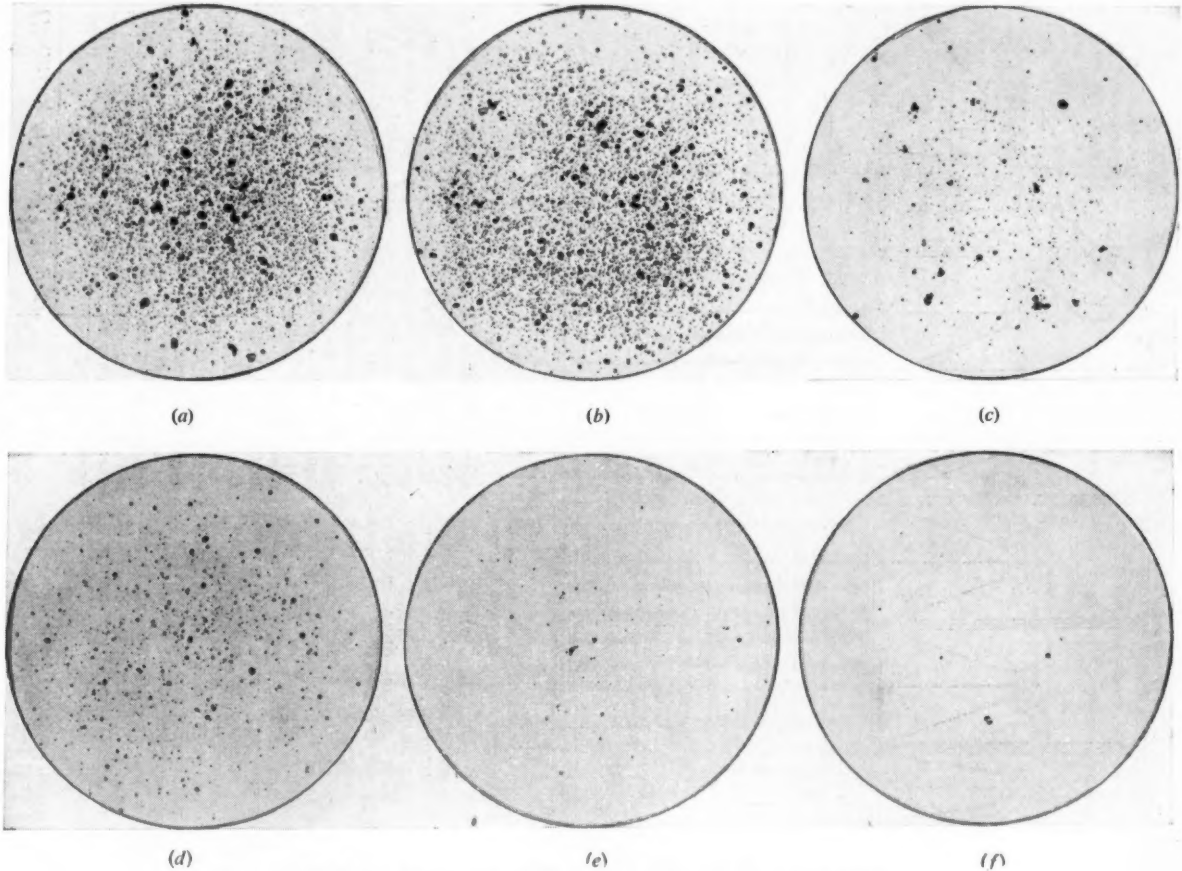


FIG. 17.—SAMPLES OF DUST TAKEN FROM VARIOUS LOCATIONS.

(*a*) From near mechanised foundry knock-out grid.
(*b*) From near faces of fettling shop operators breaking core of heavy castings.
(*c*) From alongside Hydro-Blast plant.
(*d*) From centre of group of eight pneumatic fettlers in a light steel castings fettling shop.
(*e*) From inside foundry general office.
(*f*) From a position on the moors above Dovedale, Derbyshire.

(All photographs at ×90 magnifications reduced linearly to three-quarters actual size in reproduction).

Cleaning of Steel Castings

much of the binder must be washed from the sand, and he asked what proportion of the sand was re-used in the foundry. He wondered whether it was not better to dump the sand when in the slurry condition rather than to go through the process of recovery, sorting it into grades and drying, to make it suitable for re-use. It appeared to be an expensive process; did it pay to recover this sand?

MR. LLOYD said he considered there were very definite possibilities of the Hydro-Blast plant paying for itself by sand recovery alone, and he believed that a great deal could be done in that direction. His company had devoted much attention to that particular problem and had started sand recovery quite soon after the plants had come into operation.

On the whole, he agreed with Mr. Williams that it was not a paying proposition to use in the plant a sand which contained a bonding material and which could be re-used for backing sand; in other words, if there were usable bonding material still in the sand, it was better to send it back to the foundry, because less bonding material had then to be added in order to re-bond it for re-use in the foundry.

The Hydro-Blast was valuable, however, in reducing new sand replacement in the foundry, particularly in a mechanised sand system. In the foundry one had to use a certain amount of new material in the sand, and in the ordinary way one would dump or tip an equivalent amount of used material. The Hydro-Blast was valuable in that it reclaimed used material which would otherwise be tipped and which could be used in substitution for new sand. The answer to the problem was to get down to a consistent grading in the reclaimed sand. That was a matter in regard to which he and his colleagues had devoted much attention. They had found that most of the trouble arose perhaps from variation of water pressure in the mains and from clogging of the classifiers which graded the sand by a process of differential filtration. It was quite easy for the pockets of the classifiers to become clogged, whilst at the same time the operation appeared still to be going on satisfactorily. Accessibility of the inner chambers of the classifiers for cleaning purposes was a matter worth attention from the designers.

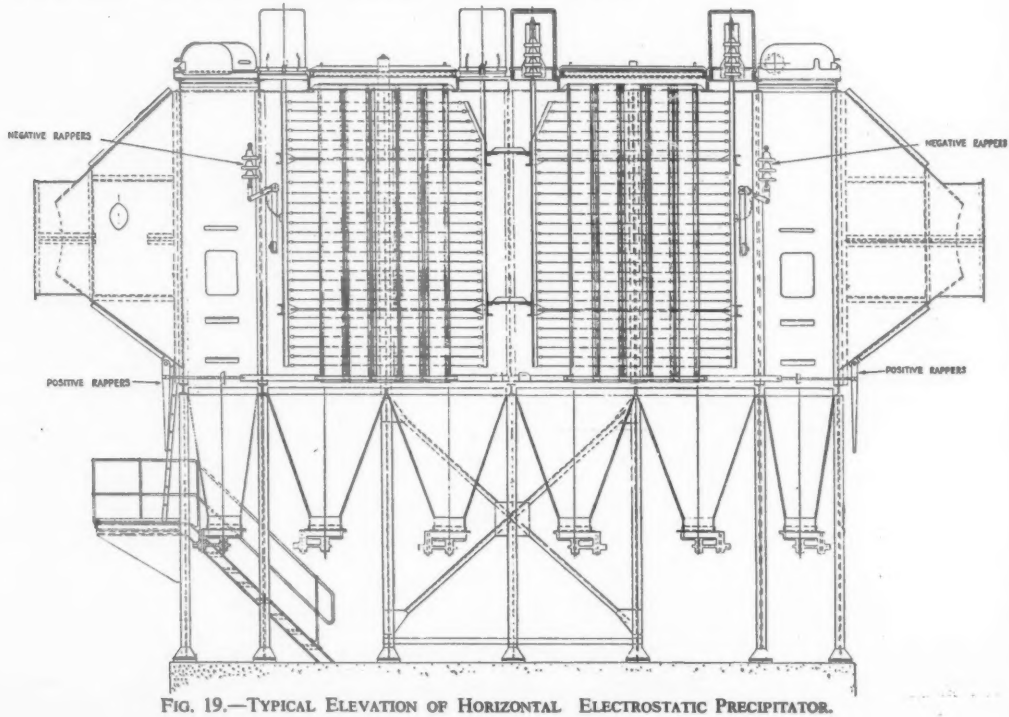


FIG. 19.—TYPICAL ELEVATION OF HORIZONTAL ELECTROSTATIC PRECIPITATOR.

Iron Oxide in Sands

MR. J. T. WELLS, who asked for Mr. Lloyd's views on the use of iron oxide in sand in order to prevent metal penetration, said it had been tried to some extent in his foundry, and, whilst they had not experienced any bad results, it was doubtful whether they had achieved any better results thereby.

MR. LLOYD replied that the use of iron oxide certainly gave a rather nice polish to the as-cast surface of a casting, *i.e.*, the condition as it was knocked out of the mould but he had never seen any proof that it had much effect in examples where penetration and burn-on were likely to occur on a big scale. At his foundry they had used iron oxide to a certain extent in some of their heavier sands, but its function was more as a pigment, so that one sand could be distinguished from another, rather than the specific function of preventing metal penetration.

Aspects of the Dust Problem

MR. C. H. KAIN (Past-President, London Branch) said the Paper was a very pertinent one for the steel founder; it covered a very wide field, and some of Mr. Lloyd's reference to moulding-shop problems were very important technically. In the fettling shop, in addition to the technical aspect, there was the very important social aspect; the industry should devote much more attention to the problem of the elimination of dust and unpleasant atmospheres from the fettling shop. He agreed with Mr. Lloyd that probably one of the reasons why the industry had not devoted sufficient attention to it was that fettling shops were noisy, dirty places, and it was difficult to get anyone to take an interest in them.

The reference by Mr. Lloyd to the much-reduced concentration of dust in the region of the Hydro-Blast, which was attributed to the greater humidity there, suggested that managements should make their fettling shop atmosphere humid throughout. It the textile industry, atmospheric humidity was deliberately created for processing purposes, and Mr. Kain failed to see why it should not be tried in fettling shops if it helped to reduce the dust problem.

Asking if the dust samples shown in Fig. 17 had been ignited, Mr. Kain said that that was important, because dust, like the poor, was always with us, but there was bad dust and not such bad dust. The carbonaceous dusts were not necessarily very injurious to health, and if the samples near the knock-out, for instance, contained a large amount of carbon, then the picture was not so bad as it appeared to be in Fig. 17. He asked the question specifically because he had recently made some similar tests at his foundry and had found that the samples taken in the iron foundry looked very much worse than those in the steel foundry, which indicated that the presence of carbonaceous material—coal dust, and so forth—tended to make the samples appear very much worse. It was also important, from the points of view of unpleasantness and of health, to divide the dusts into those of sizes less than and above 5 microns, for it was necessary to concentrate on the elimination of very fine dust before one allowed oneself to be distracted by the heavy dust.

MR. LLOYD replied that the samples of dusts shown in Fig. 17 were not burned-off first; they were shown just as they were taken in the foundry.

The CHAIRMAN (Mr. N. P. Newman, J.P., Senior Vice-President) said he was not sure that, by introducing humidity into the fettling shop atmosphere in our efforts to eliminate the occurrence of silicosis, one might not introduce another disease. The matter needed to be studied carefully.

MR. KAIN agreed that it must be studied.

MR. F. J. WILLIAMS said he understood that when the Hydro-Blast plant was first introduced into this country there was some trouble due to operators contracting septicemia. If the operators of the

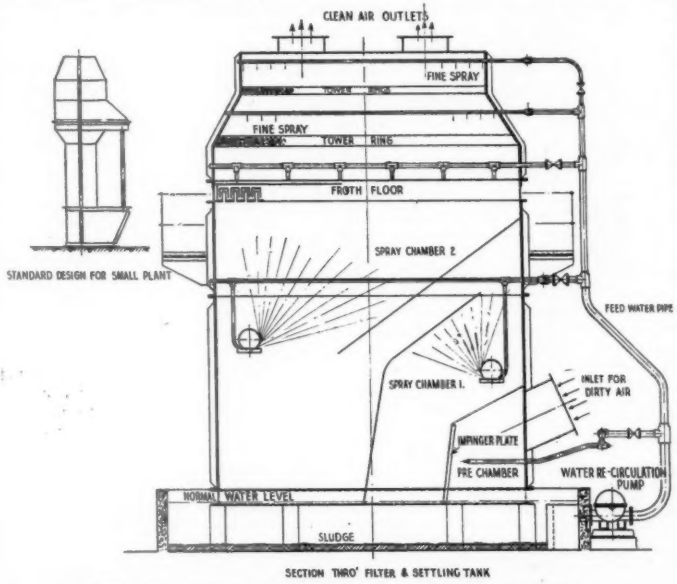


FIG. 20.—SECTION THROUGH SETTLING TANK AND PART-SECTION THROUGH TRAUGHBER FILTER. OPEN ARROWS DENOTE MIST, CLOSED ARROWS DENOTE AIR.

Cleaning of Steel Castings—Discussion

Hydro-Blast plants happened to cut their skin, the cuts rapidly became septic.

MR. LLOYD replied that that had not been a serious problem in his company's works. Although the operators wore protective suits, rubber gloves, and so on, the water and sand did get between the sleeve and the glove and the operator's hands still became very wet. One or two men had complained that their hands were getting sore, but there had always been sufficient operators who did not suffer from the complaint.

Chemical Treatment for Sand Removal

MR. E. LONGDEN drew attention to the development, in the United States, of the chemical treatment of castings, by the electrolytic molten caustic solution treatment. He understood that it had shown great promise and had generated beyond the experimental stages.

MR. LLOYD replied that he, too, had heard of that treatment very recently, and it was something about which the industry needed to find out much more, because those concerned with steel foundries were convinced that the silicosis trouble arose principally, if not exclusively, from chipping off burnt-on sand; it seemed to him that, if that type of material could be removed by chemical treatment, almost the whole of the risk would disappear.

MR. KAIN said he had investigated the electrolytic caustic soda treatment and had found that it would not remove burnt-on sand. It was essentially a reduction process, and if the adherent material were an oxide and not a sand, the treatment would remove it, but it was not successful in removing burnt-on sand in the absence of oxide.

Quality of Re-claimed Sand

Arising out of the use of the Hydro-Blast, he said the α-β change in quartz was very sudden, but he presumed it was possible that, after the quartz had been through the reversion a number of times, it might tend to become stable. He asked if there were any evidence to show that sand, after cleaning in the Hydro-Blast and being re-bonded, was less prone to spalling when it was used again as a facing sand.

MR. LLOYD said he could not answer the question directly: sand which had been re-claimed from the Hydro-Blast had been used almost exclusively for light "mechanised" casting, where spalling did not arise. However, the experiment which Mr. Kain's question suggested might be worth trying: the matter could be proved in the laboratory, without necessarily making a bad casting in the process.

Written Contribution

MR. H. J. YOUNG (Member) wrote that, being accustomed to ironfounding, his remarks would possibly apply to that alone. The Author, speaking of Hydro-Blast, said that casting surfaces, where there was no burn-on, could be stripped completely free from adhering sand. In cast-iron work casting surfaces needed no stripping, the Hydro-Blast being used as a de-coring agent. Further, the Author said that the humidity engendered in the fettling shop atmosphere (by a Hydro-Blast) laid a considerable amount of suspended dust, thus improving considerably the working conditions in the vicinity. He (Mr. Young) thought research should be done upon this effect. Did the Author suggest that fettling shop dust was less on a day when there was high atmospheric humidity as compared with a day when it was low? Substantial supersaturation above the dew-point—*quasi* Scotch mist—might lay heavy particles, but the slightly lower density brought about merely by slightly increased humidity would appear to him unlikely to have much effect. In any case the Author's statement was highly suggestive and warranted scientific approach. Could he investigate the case of a continuous knock-out situated x feet from a Hydro-Blast cabinet and procure ten slides like "*a*" of Fig. 17 *without* the Hydro-Blast working, followed by another ten *with* it working, all else being equal; and so prove the matter beyond doubt. An interesting point arose from a consideration of the fact that prevailing winds blew sea-sand over certain Lançashire coastal towns and on many days one felt one was literally breathing fine sea-sand Indeed, one must be so doing. Yet, as far as one knows, silicosis was not rife among their inhabitants.

Water Impregnation Before De-coring

He (Mr. Young) suggested one solution to part of the fettling shop dust problem might be to impregnate the cores of the castings with six per cent. of water some hours before they were de-cored. It seemed possible this could be done by forced injection, hypodermically so to speak, and he hoped to conduct experiments along such lines. He had contributed to this discussion because he found the Paper of extraordinary interest. It was a controversial subject warranting far more examination than had been given to it, and those who lived in foundries thought that much was accepted as fact which had yet to be proved. He himself suspected that the industry was treating two problems as one. The first was the unpleasantness, dirtiness and disadvantages of foundry dust, particularly when black in colour. The second was the physical disabilities brought about by . . . what? In his mind the latter resolved itself into a conception of impalpable, possibly ultra-microscopic, particles which once becoming air-borne remain so for seconds or years according to conditions as yet uncontrolled. If this were even partly true then the alleviation of the dust nuisance bore small relation to that of the disease danger. The air in the foundry office might be more dangerous, for all we know, than that in the foundry. The firm of Mather & Platt, Limited, with which he (Mr. Young) was associated, was carrying out continuous and large-scale tests on these matters, but what he had said above was merely the result of personal observation engendered by this excellent Paper.

THE ENGINEERING EQUIPMENT AND MATERIALS EXHIBITION will be held at the Old Horticultural Hall, Vincent Square, Westminster, London, S.W.1, from January 26 to February 9, 1949.

London Conference Discussion

Some Fundamental Problems in Foundry Planning*

Opinions on Inter-Departmental Relations

By Jorgen Drachmann

Introducing the speaker, the CHAIRMAN (Mr. D. Howard Wood) said it was a very real pleasure for him to take the chair at that session when Mr. Drachmann, from Sweden, was presenting his Paper on "Some Fundamental Problems in Foundry Planning." Mr. Drachmann had come over specially for the conference and they were very glad to have him with them.

Mr. Drachmann then presented his Paper.

DISCUSSION

MR. W. A. TURNER said he would like to raise the case set out on page 1 of the Preprint, the relation between planning, sales and directorate. It was an attitude with which, quite frankly, he did not agree and could not appreciate.

The sales department was one of the prime money-making or order-getting departments of the foundry, and it must have a deciding voice in policy. Therefore, if the relationship between the sales and planning departments were to be achieved, he contended that the selling department should take over the lead from the planning department which should be subservient and should try to carry out the sales department's wishes within the limitations imposed by the foundry.

The second point was the re-arrangement of orders, which was also mentioned in that same sub-section—Relations between Planning, Sales and Directorate. The re-arrangement of orders was again a sales department matter and was not to be directed by the planning department at all, except where the work and organisation of the factory would be disorganised, to a large extent by complying with sales department wishes. Where, however, an ordinary re-arrangement of orders was requested by the sales department, that department should be able to impose its desires on the planning department and not *vice versa*.

Total Load and Margins

As to the question of total load and margins, he did not think that total load information by itself was very much use to the sales department. It was mainly of use in defining broad principles. But tenders had to be quoted on fairly definite information (or they would have to be in the future when the buyers' market returned), and delivery would have to be quoted on the basis of an analysis of every section and not as a total load on the whole foundry.

Margins—as described in the Paper—were not part of the British system, where the main effort was to keep every minute planned, but open to alteration. In other words, the system must be kept flexible without leaving an unplanned margin. Even so, a fairly normal specified margin seemed to him to be an unprofitable source and resulted in snap decisions being taken, which sometimes might not be in the best interests of the firm.

On the question of forecasting, Mr. Drachmann had said: "If the sales department said that they did not know what the sales were going to be during the following year of production, which was quite likely, then it was necessary to inform them that it was their job to know—or guess." Surely not "to guess," but "to know," was requisite. Executives should be able to establish some sort of intelligent estimate based on present orders and analysis of past orders, which was so much better than a mere guess. If the planning department had to work on guess-work from the sales department, it might just as well not function at all.

Assessment of Contract Wages

Contract wages in relation to time and men employed were supplanted by time values in this country. From day-to-day and night-to-day shifts where different rates were paid for the same work, the only real basis for any form of production planning or allocation was that of time. If they were working on a standard cost system, their time factors were unalterable, and they should not be altered. If need arose, after a period of experimentation, they could set standard times, and that was very much more definite than any contract wages.

Mr. Drachmann claimed that loading and progressing were really of no importance. Loading and progressing were functions of planning and were not independent of it, but had to be taken as much into account as the other factors which Mr. Drachmann had dealt with in such detail. Despite the criticisms that he had made, it was not to say that he was unappreciative of Mr. Drachmann's Paper. The questions discussed were very worthy of interest.

MR. J. DRACHMANN, replying, said, with regard to the selling department, he thought Mr. Turner had misunderstood him, because the selling department had every opportunity and must alter the planning of the sales when necessary. The only thing he said was that it should be the responsibility of the sales department to make those alterations, that was, if the selling department wanted one order taken first, it had to take the consequences with the customers who got their orders postponed.

*Paper presented at the London Conference of the Institute of British Foundrymen, June, 1948, and printed in the JOURNAL, August 5.

Discussion on Foundry Planning

It seemed to him that they could never tell what terms of delivery they could offer on a new order if they did not know the total load on the foundry. When speaking of margins, he did not mean that he would not run the foundry as efficiently as possible. Of course, he would use every minute of working time, but, as far as his experience went, he had never heard a customer complain of getting his goods a week before the time he was promised them, but he had had customers complain when they received them late. If he wanted to be sure of delivering goods at the specified time, he had to take a certain margin when they planned, because he would be very lucky if he could invariably run the foundry on the absolutely theoretical capacity all the time. The man who might be just the right man for doing a job might be ill for a week or two and then there would be difficulties.

Then there was the question of forecasting production. That, of course, was very difficult and he did not say it was possible to guess it, but he merely said it was not the responsibility of the planning department to guess it. It was the responsibility of the sales, who had the opportunity of making an analysis, and not the planning department.

With regard to the question of progressing, he quite agreed with Mr. Turner that progressing was necessary. He had not wanted to describe any particular system; there were a couple of hundred different methods of doing it, and it would have made the Paper too long.

Relation between Planning and Performance

MR. M. SEAMAN said he wanted to make two points which he thought were fundamental to the problem of foundry planning. First, he thought they had got to accept the view that foundry planning was a part of the total function of production control. And production control was a job of forming and operating a number of measuring instruments in the form of graphs and charts and data which controlled and showed the production position of all departments of the foundry.

He was glad the title contained the word "fundamental" because he thought it fundamental that the relation between sales planning and works performance was really a basic guide as to how accurate the foundry instruments of production control were and, from that point of view, he would be interested to hear the Swedish view of the question of their accuracy. He quoted a series of examples to bring that out. On one hand, the foundry, if it were well controlled, could have attached to it in its system a number of measuring instruments in the form of charts and data which would show the position and enable production control to do its job in respect of sales and production. But if the channels of foundry production were not interconnected to the instruments of measurement, there would be a severe breakdown. He had found from many years of experience that that was really the fundamental problem of foundry planning.

Necessity for Finger-tip Information

He thought the extreme example in this country was of a foundry doing a multitude of castings, say, of an average weight of the order of 40 lb. A particular foundry he knew had a production round 120 tons a week. Roughly, there were 5,000 castings in progress a week, which, with a stock of four or five weeks, meant the control of 20,000 items. For instance, if they made a delivery of valve castings, they wanted all the castings out and that made it very important that their foundry planning instruments should tell them very quickly what was happening, so as to get replacements and balance of sets. That, he thought, brought home his point that the measuring instruments in foundry production control, if they were accurate and if they had planning and merchanting under their control, would get very much better results than they would if their measuring instruments were not connected to the actual facts of production.

He had been struck by the example of a foundry in Michigan where the fettling shop took castings up to about 400 lb. in weight. The whole of the fettling shop was channelled with pendulum conveyors so that the production control of the whole delivery was at a very high level. It prevented that serious complication of having an enormous number of castings in a given shop, with attendant difficulty of keeping track of, say, 20,000 items. He would like Mr. Drachmann's views on the matter, that we had not got foundry planning fundamentally worked out unless we were absolutely sure that foundry lay-out was both feasible and helpful to planning and progress; and that measuring instruments would have a reasonable margin of accuracy. This was, of course, most important to the sales department, because the sales department usually wanted quick decisions on changes of priorities and sought satisfaction for a customer in terms of balance deliveries, and that they could not do unless measuring instruments were correctly geared to the foundry.

Training of Executives

There was another fundamental point: it was that the question of foundry planning was fundamental to the attitude of everybody who worked in the foundry. He was not sure that they had done enough in training a high grade of executives and supervisors.

They felt that while the various instruments of foundry education both in the management side and the technical side were satisfactory to a graduate level, they were unsatisfactory at a post-graduate level. The mass of supervisors, sales people, production people and so on, and general management who shared in those problems had to have a common viewpoint, which he did not think they had at the moment. They had organised a course of lectures in the North-West with the title of "Foundry Management and Technology," and they were going to try to give an overall summary of the fundamentals of foundry technology and management. They hoped in that way to bring it home to everybody who shared in the problem of foundry planning that the main point was an increase in understanding and an increase in general ability to organise a foundry to give

a high level of efficiency. He asked for Mr. Drachmann's comments on Sweden's view of this matter.

Allowance for Eventualities

MR. DRACHMANN, replying, said he had mainly worked in foundries doing repetition work, and they found before the war and during the war, when they had a normal market, that the best margin to use was the half day each week. In Sweden they worked five whole days of eight and a half hours from Monday to Friday and then a half-day on Saturday of five and a half hours. They never planned anything for Saturday. That was, they planned each week five whole days and then they had the Saturday to take in any possible arrears. That was sufficient at that time, but after the war they had had strikes and other difficulties with their workers and much absenteeism, and now he thought it would not hold and they would have to work with a somewhat greater margin.

It was interesting that the point should have been raised about getting the information of what had been done in the foundry as quickly as possible to the planning department. In the foundry he was speaking of, the rate-fixers went round every morning and listed, in triplicate, the castings produced; the first copy they kept themselves for the calculation of wages, the second went to the planning department, and the third was statistical. On this last copy the foreman afterwards put in all the wasters with a statistical analysis and the reason for the wasters. The complete analysis was finished about noon the day after the castings had been made. If it happened that there were a lot of wasters in the fettling shop afterwards, it would be possible to find that out the following day, because they had the fettling shop working in exact tune with the foundry. So in two days after the castings were made it would be possible for the planning department to know how much was made. He did not think that could be bettered.

The question of education, he thought, rather fell outside the scope of the Paper. But he could say that they were trying in Sweden to train their foremen to a certain standard. For the last two years they had a foremen's class, and he had been a teacher there. Otherwise the higher technical school people came from their technical college in Stockholm, but it had to be admitted that there was a shortage of foundrymen in Sweden. It somehow did not seem to be really an attractive job for young engineers to go into the foundry.

MR. BROWN said he would like to stress Mr. Drachmann's point about providing for the unexpected by a margin. During the last few years it had, he supposed, been a general experience that there was a good deal of routine repair work to be carried out. Renovation had been taking place. Everywhere ships had been putting into port for routine repairs before they sailed again, and, to quote from his own personal experience, he supposed at the present time one-eighth of their total work in progress was repair work. The salesmanship that involved standard production, and therefore much repetition work, was much more amenable to planning than in the case where practically almost every order involved something different and where, as far as the foundry were concerned, it was a feeder for the machine shop. It supplied castings from a few ounces up to perhaps seven or eight tons. Planning was made more difficult if, on top of that, the abnormal amount of repair work that came along had to be done in a hurry.

Payment for Night Work

There was one further point which related to the use of contract wages as a basis. Why not? Why should a casting cost more because it was made at night than during the day? He believed they all tried from the costing point of view to keep to their standard costs—and he would like to know if it was general experience that what was called "non-productive overtime" in some places was the amount which was paid above the standard rate cost of day shift. Was it charged to production or overheads? If it were charged to overheads, then day and night wages were comparable.

MR. DRACHMANN said he appreciated the difficulties of planning under such circumstances. As he thought he had mentioned, his main experience was with repetition work, so he really had not tried to cope with the problems of shipyard repairing shops. That seemed to him to be a rather special kind of work.

With regard to the costing problem, he would say that in Sweden their standard costing system would always include extra cost for shift working in the overheads. They would not have different piece rates for day or night; they had the same piece rates and a percentage on them for the different shifts.

Balance of Production

A MEMBER said Mr. Drachmann mentioned in his Paper the prime work of his foundry was the production of sectional heating boilers and heating equipment, and he was engaged with a company that made similar material. One serious problem they found—and he hoped Mr. Drachmann could help with suggestions on the point—was that they had to produce certain heavy units with heavy-sectioned castings, and with those same units they had to combine lighter units. They tried, in planning, to avoid a light job of one unit beside a heavy job of another unit, but they found it practically impossible to keep one unit tied to a heavy job when the other would be going on to lighter work. Had Mr. Drachmann met with that problem and could he give any idea of how he dealt with it? It was a problem of keeping units and keeping total weights in balance to avoid those variations of cupola charge.

MR. DRACHMANN, in reply, said it seemed a little difficult to extemporise on that question at the moment.

The Member interposed to remark that it was for a continuous cupola.

MR. DRACHMANN, continuing, said in Norrahammar one of the foundries was continuously working side by side with a discontinuous section. They took about five tons an hour for the mechanised plant, and then, during the afternoon, they had the whole of their non-mechanised section requiring metal, and they melted everything in one cupola each day. It was done in this way: They ran the cupola in the morning at five tons an hour.

Discussion on Foundry Planning

About mid-day, lunch time, they stopped, added an extra charge of coke, and in the afternoon melted at ten tons an hour in the same cupola. That was quite an accepted thing, and it was done every day in the foundry. He thought they did not generally realise what a flexible thing a cupola was until they had tried it and knew how to manage it.

Planning and Personnel

MR. A. KIRKHAM said he would first like to say that Mr. Drachmann in his Paper had put his finger on the major point that ran through all production control in this country, that point being the question of interference from sales' managing directors, *etc.* He felt sure that every practical production engineer in this country would agree with him when he said that the system was ruined by that. He had not a very long experience, but long enough to know that the king-pin of the industry was production control, providing that the person in charge of production control was without doubt the most outstanding person in the company. In this country he thought we were sadly lacking in that direction and he would like to take advantage of Mr. Drachmann's suggestion of writing to him.

With regard to education at higher levels on which a previous speaker had mentioned a course in the North-West area, he thought the answer to the whole of their problem in that direction was based on educating practical men, not only the wholly technical men, and bringing the practical foundrymen up to a standard so that they could assimilate the necessary material at higher levels.

Another point in the Paper which interested him was the question of margins. He first asked Mr. Drachmann if he issued to his sales department a pre-planned load on the same basis that he issued his individual load to the department concerned. Second, did he, when he issued his individual load, decide on the loading for the particular section of the works? Did he decide the sequence of those jobs in each particular operation? What he meant by that was, did he take away from the shop foreman in particular in that way his individual ability to decide which job they would do first? He felt that the majority of production planning systems, if they did that, destroyed the initiative and ability of control of the very good foreman. He would like to have Mr. Drachmann's opinion on that, because it varied considerably throughout the country and some planners said "Yes"—they decided every detail. Personally, he did not agree.

MR. DRACHMANN said, when the sales department demanded a term of delivery on a certain order, they got the term of delivery with due respect to the margin. That was the margin that they kept in the planning department. It was a matter which did not concern the sales department in any way. The foundry undertook to deliver the goods at that date. The question about the foreman's position in relation to planning was a rather delicate matter. In the foundry where he had had most experience, the foreman did not do any planning at all. It was all repetition work; they got their orders from the planning department for the day and all changes were made in the planning department and sent to the foreman or in some cases directly to the workers. At the most, those orders would be for the day and the day following. When the system started there had been some difficulties, but his own experience started after that period and there had never been any trouble.

Methods in Holland

MR. KALFF referred to a planning system which they had in a foundry in Holland. They had the same difficulties about margins, for the managing director was always butting in and saying, "I want this out," and, if they said they delayed it, they were told to improve their production sufficiently to get it out. They found it satisfactory to keep a large margin in their planning for those special rush orders. Then, if a special order came along, there was always the opportunity of doing it; if none came along, they got on with the regular work. Incidentally, their foundry was a mixed mass-production and jobbing and they had fairly large runs, usually of all sorts of work. They simply gave the foreman the week's work, which he could arrange as he thought fit, as long as he got the work through in the week.

Departmental Functions

MR. TURNER apologised for having left out of his previous remarks his main point. He felt that Mr. Drachmann had rather caused some confusion over what we called "control" in contradistinction to "planning." Planning was part of the function of control, and the other use of the function mentioned in Mr. Drachmann's Paper came in the heading, "Control as Distinct from Planning." There were over 20 different functions in production control, the majority of which, admittedly, came under planning, but they were distinct from those purely of control.

He thought he must have given a wrong impression to Mr. Drachmann when he talked of planning as a service department. It was, but that was not to say that minimised its importance, and it had to be given sufficient information to do its job properly. He then referred to the managing director, who had been mentioned during the discussion, and said it would seem that post-graduate education, if everything that other speakers said was true, might well be applied to managing directors also. The old type of managing director did come into the shop to see his orders through, but the modern managing director realised that he did not keep dogs to bark himself. He hired good men to co-operate among themselves and for him to interfere as little as possible while co-ordinating their efforts. That, he thought, was more the trend these days.

Mr. Brown's point was interesting in that he was dealing with precisely the opposite extreme from the subject of the Paper. Mr. Drachmann had a large-scale repetition foundry. Mr. Brown apparently was talking of a jobbing foundry where they got no notice of their orders and the work came in from day to day

and had to be turned out as quickly as possible. In that type of foundry the planning and control departments were of the utmost importance and had to be efficient to do their job.

Production *versus* Sales Control

MR. BROWN, who had previously referred to the difficulty of planning where a large amount of odd-job repair work had to be included, asked that he might be allowed to correct an impression he might have made. His was not a jobbing foundry, but a foundry which was turning out proprietary production all the year round, but was constantly being interfered with in recent years by so much necessary repair work. At one time before the war he supposed their repair work would not be more than one-twentieth of their production, and when he said that their work in progress at the moment ran into four million pounds, and one-eighth of that at the moment was repair work, it was not exactly that the rest was jobbing work. They had their regular production, but they had to pay due regard to demands that were coming in at all times and for which the customer could not wait too long. He was a cost-accountant and therefore could understand all that was said on planning and managerial matters, but he would like to suggest that the old and efficient managing director might have given place to the new salesman who would promise his customer the earth, whether his firm could do it or not.

The CHAIRMAN said the discussion had been most interesting, and he thought Mr. Drachmann had quickly realised that the Paper he was presenting was one which would promote discussion. In the old days, ever since he had been connected with the Institute, there had always been a discussion on the relative merits and demerits of the Patternmakers *versus* the Foundry. In future it would seem that the annual topic should be Production Control *versus* Sales Control, and even coming down to the managing director. They were indebted to Mr. Drachmann for presenting his Paper, and for raising such thoughts in their minds. He felt sure he would receive many communications and would have many further questions put to him by correspondence. They were also exceedingly obliged to Mr. Drachmann for the satisfactory way in which he had dealt with the queries raised.

MR. DELPORT, proposing a vote of thanks, said that obviously in these days of increased production, foundries with large orders found the question of planning and control was very important. He had been interested to see from the discussion that everyone was imbued with the idea of the importance of those questions, but evidently the ideas and thoughts had not yet crystallised. A discussion such as the one they had had was helpful to throw light on many subjects. He thought they would be grateful to Mr. Drachmann for having prepared the Paper.

Having been closely connected with the international aspect of foundry meetings of that character, and taking an interest in exchange Papers, he was very pleased to see that they had received a Paper from a Swedish

(*Concluded at foot of column* 2.)

Zinc Melting Pots*

By Gabriel Joly

The temperatures reached (when melting zinc) by the base and walls of a pot are relatively high (about 550 deg. C.), which necessitates the use of a heat-resistant iron. The design of the castings should be streamlined so as to avoid too pronounced internal stresses and the liability of cracking. During melting, one should bring the charge up to temperature gently, so that the upper crust still remains solid. It is necessary to note that zinc, just like lead, has a high coefficient of expansion and so one should take into consideration the increase in the specific volume on melting.

The iron should be close-grained to avoid the infiltration by the metal contained in the pot. The zinc very slowly dissolves the walls of the pot.

To answer the conditions and to avoid the inherent drawbacks mitigating against the successful use of cast iron, a metal[1] containing a low chromium content, such as was developed by Mr. Le Thomas, has given general satisfaction. Its composition is as follows: C 3.10 to 3.50; Si 2.40 to 2.50; Mn 0.8 to 1.0; S. as low as possible; P. less than 0.30 and Cr 0.6 to 0.80 per cent.

The silicon content is only given as a guide, the control of this should be based on the casting of square test bars of which the cross section will represent the thickness of the walls of the pot, and ensuring, when making them, that the angles will be slightly chilled.

Such an iron, which is of close grain should, in order to give good service results, be subjected to a stabilisation treatment before use. Taking account of the size of these castings, this operation is generally difficult to carry out satisfactorily and usually it suffices to bring them slowly up to temperature during the initial heating so as to eliminate, as far as possible, the internal stresses. Upon this depends, to a very large measure, the life of the pots.

* Translated from *Fonderie*.

[1] A. Le Thomas, "The Industrial Applications of Irons of Low Chromium Content."—*La Fonte*, No. 19, Jan.-Feb., 1935, page 719.

New Catalogue

Street Lighting Equipment. Allied to the problem of street lighting equipment is the illumination of foundry stock yards. It is from this angle that our readers will find interest in a catalogue bearing this title recently issued by the General Electric Company, Limited, of Magnet House, Kingsway, London, W.C.2. It is tastefully presented and excellent use has been made of illustration.

foundry. He had great pleasure in proposing the vote of thanks.

MR. TURNER formally seconded, and the vote was carried with acclamation.

Book Review

Precision Investment Castings, by E. L. Cady. Published by Chapman & Hall, 37, Essex Street, Strand, London W.C.2. Price 36s. net.

This book, which sets out with the admirable aim of putting precision investment castings in their true perspective, leaves much to be desired. There are many generalised statements, especially in the earlier chapters, which are open to question, and some of the figures quoted in the chapter dealing with dimensions and accuracies are rather optimistic. The section discussing the economies of design is very good and can be recommended to all designers of castings, whether engaged in precision investment casting or not.

The later chapters dealing with dies, wax injection, investing and casting, give a good general survey of the process. A most noticeable omission is the lack of discussion of indirect-arc melting practice which is used extensively in the precision casting field and is in fact illustrated in the book on a number of occasions. Also, no attempt is made to discuss the merits or otherwise of the various investments or binders used in precision casting, but such details as permeability and physical qualities are dealt with at some length.

Although this book has been written primarily for engineers, no guidance as to the mechanical properties expected from the various metals and alloys cast are quoted, the author being content to dismiss these as "the '*x*' factor." There is no reference to current literature, but a warning is given of the complexity of the patent situation. This book may be read to advantage by persons requiring a general view of precision investment casting. Those engaged in the industry will find little that is new to interest them or help solve their problems.

D. F. B. T.

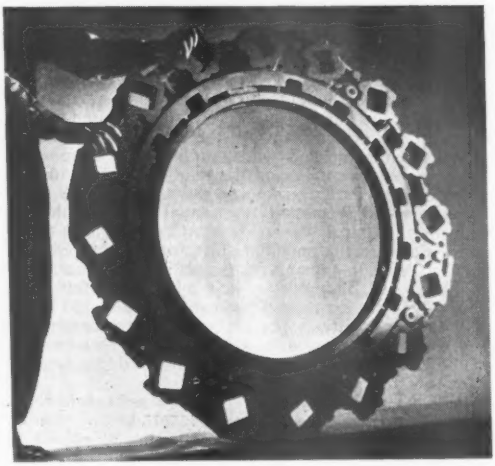
British Standards Institution

Alloy Steel Castings for Structural and General Engineering Purposes

The British Standards Institution has recently published B.S. 1458/9 which includes two specifications for alloy steel castings for structural and general engineering purposes, the first having a tensile range of 45 to 55 tons per sq. in. and the second 55 to 65 tons per sq. in. For each specification, test values for the tensile, yield stress, elongation, reduction in area, impact and hardness test are stipulated. The chemical composition is not specified except for the sulphur and phosphorus content. Recommended heat treatment temperatures are given in appendix A. Provision is made for non-destructive tests and hardness test after heat treatment where required. Details are included of process of manufacture, fettling and dressing, freedom from defects, testing facilities, branding and repairs to castings. Appendix B gives recommendations with regard to welding procedure. As is usual, a considerable amount of discretion is left to the representatives of purchaser and manufacturer.

Copies of this standard can be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W.1, price 2s. post free.

AIR-INTAKE BODY CASTING



DIFFUSER RING

Light-alloy Castings for Aircraft

Illustrated above are examples of light alloy castings made recently for the aircraft industry by High Duty Alloys, Limited. The Air-intake Casting is for the Armstrong Siddeley "Mamba" engine and weighs 89 lb., while the Diffuser Ring is for the De Havilland "Goblin I" Both are sand cast in "Magnuminium 220" alloy.

Production and Distribution Census

By F. J. Tebbutt

The Statistics of Trade Act, 1947, although dated 1947, is only just coming into full operation, so far as the taking of a census is concerned. The Act gives power for the taking of statistics of Production and Distribution, and takes the place of the former Census of Production Acts, 1906, 1917 and 1939, now repealed. The provisions of this new Act are more comprehensive; the old Acts only applied to production, not to distribution, while this Act provides for a Census of Distribution for the first time, applying to everything retailed to the public and including services (*e.g.*, repair work, hairdressing, etc.). A census of production will be taken annually (previously the interval between was five years), but no stated intervals are quoted in the Act as regards the census of distribution; such intervals will be laid down in Orders of the Board of Trade.

Present Position

The present position is that the first full Census of Production will be taken in 1949 in respect of 1948. and the first full Census of Distribution in 1950 in respect of 1949. For production, a census (compulsory) concerning a few trades was taken in 1947 in respect of 1946 figures (and under old statutes); for distribution there has been a pilot census (voluntary) concerning certain towns and counties in the early months of 1948. This latter was taken mostly for the gaining of experience in respect to such a census. Committees are considering these preliminary and trial figures, for no full census of production has actually been taken since pre-war days, to see if the experience gained will enable the forms for the full census to be simplified.

The procedure is that forms are sent out upon which various particulars are required—under penalties—to be given by the firms concerned, but these forms may vary as to the statistics to be given, mostly according to the size of the firm and so forth, *e.g.*, there may be one-page forms for small firms or firms with not exceeding 50 employees.

The matter concerning which answers may be required are listed in the Act; and one or all of the questions may apply, but which items are adopted for particular industries and trades or firms for information to be given will be mentioned in the particular forms to be completed.

Headings under which Statistics are Requested

The matters concerning which the Department is empowered to ask questions are as follow:—The nature of the undertaking (including its association with other undertakings) and the date of its acquisition; the persons employed or normally employed (including working proprietors), the nature of their employment, their remuneration and the hours worked; the output, sales, deliveries, and services provided; the articles acquired or used, orders, stocks and work in progress; the outgoings and costs (including work given out to contractors, depreciation, rent, rates and taxes, other than taxes on profits) and capital expenditure; the receipts of, and debts owed to, the undertaking; the power used or generated; and the fixed capital assets—the plant, including the acquisition and disposal of those assets and plant, and the premises occupied. In addition, by Orders in Council, further matters concerning which information can be sought, can be added to the foregoing list, but any such Order must be laid before both Houses of Parliament.

Sundry Matters

The Board of Trade has power to exempt any persons or classes of persons from the obligation to furnish returns. By announcement in the London (or Edinburgh) Gazette or other newspaper the classes of undertakings required to make returns will be given, and this will be deemed sufficient notice to any concern within that trade field to make a return, even though no form may have reached that firm. Individual estimates or returns will not be made public. What will be open to the public will be a summary of the particulars provided by the industry concerned.

Mechanisation in British Industry

A suggestion that the wholesale adoption of American mechanisation methods might be "disastrous" to British industry was put forward by Mr. Daniel Sharpe, a past-president of the Institute of British Foundrymen, when consideration was given to a communication from the British-American Council on Productivity, at a meeting of directors of Glasgow Chamber of Commerce on September 20. He had himself introduced American methods in Britain, he said. It was extremely difficult to be moderate and introduce only things which would satisfy the British market. He was afraid that the wholesale attempt, such as was indicated in the communication before them, might be disastrous, not only for personnel, but also for equipment.

Standard of British workmanship was so much higher than the skill evinced by the average American workman that the British people would not take to mechanisation to such a degree as existed in America. They had also to remember that they did not have the markets for mechanising to the extent of the American automatic machines. Mr. Sharpe agreed to put his opinions in writing and submit them for forwarding to the Association of British Chambers of Commerce.

House Organ

Albion Works Bulletin for September. Published by John Harper & Company, Limited, Albion Works, Willenhall.

The reviewer was particularly interested to learn that the Joint Production Committee is giving consideration to the maintenance problem of the standardised moulding boxes used in these works. There is more internal standardisation of moulding boxes than is generally realised. Tidyness was another worthwhile subject discussed. The "star" article by Dr. Fisher, Principal of the Wolverhampton and Staffordshire Technical College, on Science in Industry is opportune, for it is at this time of the year that technical classes restart.

Pig-iron and Steel Production in Great Britain

The following particulars of pig-iron and steel production in Great Britain have been extracted from the Statistical Bulletin for August, 1948, issued by the British Iron and Steel Federation. Table I gives the production of pig-iron and ferro-alloys in July, with the number of furnaces in blast at the end of the month; Table II, production of steel ingots and castings in July, and Table III, deliveries of non-alloy and alloy finished steel. Table IV summarises steel-industry activities during six months ended July, 1948.

TABLE I.—*Weekly Average Production of Pig-iron and Blast-furnace Ferro-alloys, July*, 1948. (*Thousands of Tons.*)

District.	Furnaces in blast, 31.7.48	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total.
Derby, Leics., Notts., Northants, and Essex	26	—	15.8	21.3	1.8	—	38.9
Lancs. (excl. N.W. Coast), Denbigh, Flints. and Ches. / Yorkshire (incl. Sheffield, excl. N.E. Coast)	6	—	5.4	—	—	1.4	6.8
Lincolnshire	13	—	23.2	—	—	—	23.2
North-East Coast	25	8.2	31.0	0.5	—	1.4	41.1
Scotland	9	0.7	10.4	3.0	—	—	14.1
Staffs., Shrops., Worcs., and Warwick	8	—	8.2	1.4	—	—	9.6
S. Wales and Monmouthshire	8	4.2	19.5	—	—	—	23.7
North-West Coast	6	13.3	—	—	—	0.6	13.9
Total	101	26.4	113.5	26.2	1.8	3.4	171.3
June, 1948*	101	26.4	123.8	26.1	1.9	2.9	181.1
July, 1947*	91	20.0	92.6	26.9	0.8	3.2	143.5

*Five weeks.

TABLE III.—*Weekly Average Deliveries of Non-alloy and Alloy Finished Steel.* (*Thousands of Tons.*)

Product.	1947 (53 weeks).	1948 (1st 7 months).	1947. July.*	1948. June.*	1948. July.
Non-alloy Steel :—					
Heavy rails and sleepers	7.6	8.8	7.5	10.3	7.1
Heavy and medium plates	31.6	36.1	31.3	38.3	26.5
Other heavy products	31.8	34.8	30.2	35.9	27.9
Light rolled products (excl. wire rods and alloy-steel bars)	49.7	55.0	45.9	57.1	46.3
Ferro-concrete bars	3.2	3.8	2.6	4.5	3.6
Cold-rolled strip	4.6	4.7	4.0	4.9	4.2
Bright steel bars	4.8	6.0	4.6	6.6	5.4
Sheets, coated and uncoated	24.3	26.4	22.9	27.3	25.5
Tin, terne and black-plate	12.1	13.8	12.4	14.7	14.0
Tubes and pipes	13.5	14.8	12.1	15.1	14.4
Wire	10.8	12.2	9.9	13.4	10.6
Tyres, wheels and axles	3.5	3.7	3.2	4.0	3.4
Forgings	5.0	5.6	4.2	6.9	4.5
Castings	3.0	3.4	2.5	3.8	3.0
Total	205.5	229.1	193.3	242.8	196.4
Alloy Steel :—†					
Tubes and pipes	0.3	0.4	0.3	0.3	0.3
Bars, sheets, strip and wire	3.7	4.5	3.3	5.1	3.9
Forgings	1.8	2.3	1.6	2.9	1.9
Castings	0.6	0.6	0.4	0.7	0.5
Total	6.4	7.8	5.6	9.0	6.6
Total U.K. production‡	211.9	236.9	198.9	251.8	203.0
Less Inter-industry conversion	19.2	26.8	15.5	32.2	21.8
Total U.K. deliveries	192.7	210.1	183.4	219.6	181.2
Add deliveries of imported finished steel	2.2	2.6	—	3.6	2.9
Total deliveries of finished steel	194.9	212.7	183.4	223.2	184.1

* Five weeks.
† Excludes high-speed steel.
‡ Includes finished steel produced in the U.K. from imported ingots and semi-finished steel.

TABLE II.—*Weekly Average Production of Steel Ingots and Castings in July*, 1948. (*Thousands of Tons.*)

District.	Open-hearth. Acid.	Open-hearth. Basic.	Bessemer.	Electric.	All other.	Total. Ingots.	Total. Castings.	Total ingots and castings.
Derby, Leics., Notts., Northants and Essex	—	—	(Basic) 10.2	1.1	0.1	11.0	0.4	11.4
Lancs. (excl. N.W. (Coast), Denbigh, Flints., and Ches. / Yorkshire (excl. N.E. Coast and Sheffield)	1.2	17.4	—	1.0	0.4	19.2	0.8	20.0
Lincolnshire	—	16.3	—	—	0.1	16.3	0.1	16.4
North-East Coast	1.2	45.6	—	0.6	0.4	46.6	1.2	47.8
Scotland	2.7	21.4	—	1.4	0.5	24 9	1.1	26.0
Staffs. Shrops., Worcs. and Warwick	—	11.2	—	0.5	0.6	11.3	1.0	12.3
S. Wales and Monmouthshire	9.2	43.6	(Basic) 5.6	0.8	0.1	59.1	0.2	59.3
Sheffield (incl. small tonnage in Manchester)	6.6	19.5	—	5.8	0.5	31.1	1.3	32.4
North-West Coast	0.5	3.1	(Acid) 3.1	—	0.1	6.7	0.1	6.8
Total	21.4	178.1	18.9	11.2	2.8	226.2	6.2	232.4
June, 1948*	27.2	230.1	20.8	15.2	3.7	288.4	8.6	297.0
July, 1947*	21.1	160.3	17.7	9.8	2.8	205.6	6.1	211.7

* Five weeks.

(*Continued at foot of facing page.*)

Contact Between Management and Workers

Necessary for Increased Productivity

The need for more contact between management and workers if productivity were to be raised was urgent, said Mr. George Isaacs, Minister of Labour, when he opened a conference, sponsored by his department, which discussed measures to increase industrial productivity by development of co-operation between management and workers. Sir Godfrey Ince, Permanent Secretary to the Ministry of Labour, presided, and the British Employers' Federation, the British Institute of Management, the Institution of Production Engineers, the Industrial Welfare Society, and the Trades Union Congress were among the organisations represented.

Sir Godfrey Ince said that, so far as joint consultation was concerned, the Ministry, and, indeed, all Government departments, wanted to know whether industry felt any further official steps could be taken, and it wanted to know what managements could do themselves to make progress.

Mr. R. L. Roberts, of the Ministry of Labour, told the conference that one of the principal factors making for efficient working was harmonious relations between employers and workers. Full use of joint consultation could make all the difference between an uninformed and apathetic body of workers and an actively co-operative team, he said.

Sir Charles Renold, chairman of the British Institute of Management, and chairman of the Renold & Coventry Chain Company, Limited, pointed out that his firm had practised joint consultation since 1917. The prerequisite for efficiency was joint consultation within the management, so that all officers told the same story. The foundation of good consultation was achieved, he said on the factory floor in hour-to-hour contacts.

Four Papers, dealing with joint consultation, training within industry, works information, and personnel management, were read at the conference and formed the basis of discussion.

"Socialisation in Great Britain and its Effect on the Accountancy Profession"

This is the title of what can be assumed to be an exchange Paper between the Society of Incorporated Accountants and the American Institute of Accountants. It has been prepared by Sir F. J. Alban, C.B.E., the president of the former body. Anyone who has experienced the privilege of writing a foreign exchange Paper quickly realises that he must necessarily assume that his hearers are completely devoid of background information concerning the country of origin. This has, with this Paper, two effects; for the home expert, it tends to be too discoursive; but for either the foreigner or the native layman, there is clarity in the presentation of the matter which is entirely admirable.

It is interesting to re-learn that much socialisation legislation has been sponsored by Conservative governments, whilst it has not occurred to everybody that state monopolies tend to reduce the cost of auditing the books. The lecture, which was given last week in Chicago, should go far to enlighten both Americans and the British laymen on subjects of real importance, but never headlined.

A New Publication

The British Institute of Management, 17, Hill Street, London, W.1, has issued the first number of a monthly publication bearing the title "Management Abstracts," the annual subscription for which is 30s. This first issue runs to 36 pages, and certainly covers a wide field. Abstracts have been made of articles entering into the following categories:—General management; works management (and here the Paper by W. A. Turner and A. K. Jeffries, read before the London Branch of the Institute of British Foundrymen, is a typical example); financial management; distribution; supplies; transport; statistics; public administration; and education. The subject matter for the abstracts have, in general, been well chosen.

PIG-IRON AND STEEL PRODUCTION IN GREAT BRITAIN (*Continued from previous page.*)

TABLE IV.—*General Summary of Pig-iron and Steel Production.* (*Weekly Average in Thousands of Tons.*)

Period.	Iron-ore output.	Imported ore consumed.	Coke receipts by blast-furnace owners.	Output of pig-iron and ferro-alloys.	Scrap used in steel-making.	Steel (incl. alloy).			
						Imports.‡	Output of ingots and castings.	Deliveries of finished steel.	Stocks.†
1938	228	89	—	130	118	16	200	—	—
1946	234	115	169	149	147	8	244	192	1,068
1947 (53 weeks)	209	130	165	147	145	8	240	195	797
1948—February	246	164	198	176	174	5	289	221	749
March*	243	169	192	179	175	7	291	219	780
April	247	169	200	181	178	7	294	229§	793
May	239	173	202	184	175	5	293	205	846
June*	257	171	206	181	180	8	297	223	886§
July	253	156	201	171	144	7	232	184	916

* Five weeks. † Stocks at the end of the years and months shown. ‡Weekly average of calendar month. § Revised.

Imports and Exports of Iron and Steel

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in August, and the first eight months of 1948. Figures for the corresponding period of 1938 are given for purposes of comparison.

Total Exports of Iron and Steel.

Destination.	August, 1948.	Eight months ended August.	Two-thirds of 1938.
	Tons.	Tons.	Tons.
Eire	4,640	47,866	37,146
Channel Islands	1,184	6,871	4,944
Gibraltar	100	2,120	589
Malta and Gozo	449	3,078	1,536
Cyprus	75	2,580	1,104
Palestine	466	12,073	5,380
British West Africa	2,337	28,441	33,162
Union of South Africa	8,843	95,739	154,058
Northern Rhodesia	766	6,678	13,716
Southern Rhodesia	1,852	15,552	24,142
British East Africa	3,312	43,573	17,288
Bahrein, Koweit, Qatar and Trucial Oman	1,888	20,598	*
India, Pakistan, etc.	4,968	52,647	105,784
British Malaya	2,179	18,930	44,390
Ceylon	1,473	8,185	17,354
North Borneo	143	8,588	77
Hong Kong	2,495	22,381	15,730
Australia	3,998	47,281	113,936
New Zealand	3,794	39,158	87,922
Canada	921	15,031	56,940
British West Indies	2,981	22,960	29,500
British Guiana	310	3,244	1,997
Anglo-Egyptian Sudan	760	6,613	5,526
Other British countries	1,111	11,126	9,307
Russia	—	13,119	2,900
Finland	6,843	50,525	11,738
Sweden	6,272	66,388	7,983
Norway	7,065	41,643	13,516
Iceland	615	3,374	438
Denmark	6,070	51,764	58,170
Poland	187	1,437	1,658
Netherlands	4,279	55,516	34,372
Belgium	678	7,652	13,550
France	1,845	11,260	8,924
Switzerland	1,028	12,512	1,855
Portugal	700	16,520	5,142
Spain	411	4,253	5,176
Italy	1,140	3,542	3,426
Hungary	171	762	21
Czechoslovakia	16	236	1,543
Greece	125	2,413	1,168
Turkey	344	11,538	9,172
Dutch East Indies	2,745	16,124	18,204
Dutch West India Islands	549	5,429	1,642
Belgian Congo	216	895	203
Algeria	276	607	35
Portuguese East Africa	149	1,662	9,480
Syria	72	2,386	1,737
Lebanon	657	6,964	
Egypt	2,567	31,438	22,940
Iraq	4,637	35,888	17,160
Iran	9,930	74,676	73,586
Burma	859	20,074	12,342
Siam (Thailand)	146	1,683	3,998
China	685	12,709	15,006
U.S.A.	1,298	2,532	1,458
Cuba	23	1,658	482
Colombia	817	5,175	2,549
Venezuela	4,497	35,333	3,116
Ecuador	183	1,811	1,062
Peru	290	2,488	2,021
Chile	303	7,166	4,196
Brazil	933	11,959	11,326
Uruguay	307	5,839	5,058
Argentine	9,229	64,452	52,904
Other foreign countries	3,202	20,594	54,465
Total	133,404	1,265,309	1,277,250

* Included in "Other British countries" and "Other foreign countries."

Total Imports of Iron and Steel.

From	August, 1948.	Eight months ended August.	Two-thirds of 1938.
	Tons.	Tons.	Tons.
Australia	11	11,593	24
Canada	5,616	53,024	78,250
Other British countries	83	3,166	107,488
Sweden	676	10,289	59,864
Norway	2,010	19,411	22,516
Germany	701	2,626	64,000
Belgium	10,785	78,418	182,454
Luxemburg	2,491	8,139	39,068
U.S.A.	6,863	81,338	133,794
Other foreign countries	6,755	34,048	208,724
Total	35,991	302,052	896,180
Iron ore and concentrates—			
Manganiferous	9,134	28,001	41,522
Other sorts	798,453	5,984,282	3,401,246
Iron and steel scrap and waste, fit only for the recovery of metal	68,593	440,756	421,468

Exports of Iron and Steel by Products.

Product.	August, 1948.	Eight months ended August.	Two-thirds of 1938.
	Tons.	Tons.	Tons.
Pig-iron	54	599	62,628
Ferro-alloys, etc.—			
Ferro-tungsten	100	632	344
Spiegeleisen, ferro-manganese	76	2,513	3,464
All other descriptions*	91	501	698
Ingots, blooms, billets and slabs	1,165	4,230	6,496
Iron bars and rods	410	3,933	2,132
Sheet and tinplate bars, wire rods	464	2,821	10,374
Bright-steel bars	991	15,016	4,392
Other steel bars and rods	8,535	72,920	68,000
Special steel	1,354	12,805	3,288
Angles, shapes and sections	5,682	57,312	44,583
Castings and forgings	288	3,975	1,078
Girders, beams, joists and pillars	1,160	13,823	22,314
Hoop and strip	3,267	25,072	24,918
Plates, ¼ in. thick and over	8,637	80,195	87,306
Black plates	—	38,848	9,692
Black sheets	6,040	25,573	42,340
Galvanised sheets	7,775	52,626	97,956
Tinplates	11,857	124,607	212,872
Tinned sheets	332	3,150	940
Terneplates	—	118	2,884
Decorated tinplates	53	836	2,912
Other coated plates	344	2,536	150
Cast-iron pipes, up to 6-in. dia.	5,250	42,211	32,618
Do., over 6-in. dia.	2,798	36,467	28,642
Wrought-iron tubes	24,217	199,205	146,648
Radiators and central-heating boilers	257	2,277	2,685
Railway material	9,908	119,043	105,436
Wire	2,463	25,544	36,788
Cable and rope	1,945	18,510	10,934
Netting, fencing and mesh	1,513	11,708	6,278
Other wire manufactures	799	5,098	2,448
Nails, tacks, etc.	428	4,800	2,538
Rivets and washers	736	5,528	5,690
Wood screws	222	3,065	1,674
Bolts, nuts and metal screws	1,811	14,445	11,716
Stoves, grates, etc. (excl. gas)	620	7,907	4,670
Do., gas	158	1,940	1,430
Sanitary cisterns	150	1,954	1,874
Fencing material	130	2,295	3,420
Anchors, etc.	682	6,469	4,224
Chains, etc.	771	6,217	4,194
Springs	373	4,103	2,620
Hollow-ware	3,181	50,363	7,136
All other manufactures	16,317	152,419	141,826
Total	133,404	1,265,309	1,277,250

* The figures for 1938 are not completely comparable with those for subsequent years.

Parliamentary

German Scrap Deliveries

MR. GRANVILLE SHARP asked the Secretary of State for Foreign Affairs what benefits had so far resulted from the appointment of the Scrap Co-ordinating Officer in Germany; and to what extent deliveries of scrap to German ports had been increased since his appointment.

MR. MAYHEW, who replied, said that the appointment of the Scrap Co-ordinating Officer in the British zone of Germany had brought about a close co-ordination of the various sections within the Control Commission for Germany engaged in the recovery and export of ferrous scrap from disarmament and commercial sources. In reply to the second part of the question, there had been substantial increases in the deliveries of scrap to German ports in the two months since the appointment was made, *i.e.*, July and August, as compared with the deliveries previously made in any one month.

A further question by Mr. Sharp was answered by the MINISTER OF SUPPLY, who said that the total tonnage of scrap received in the United Kingdom from Germany up to the end of August was approximately 450,000 tons. Shipments in the month of August amounted to about 70,000 tons.

Steel Allocations to Clyde Shipyards

When MR. J. L. WILLIAMS asked the Parliamentary Secretary to the Admiralty if he was aware that allocations of steel to Clyde shipyards had been steadily declining, with the result that numbers of employees had been suspended and others were threatened with suspension; and would he take steps to have the position remedied, MR. W. EDWARDS, in reply, said that allocations of steel for merchant shipbuilding were made to each individual shipyard at quarterly intervals in relation to their requirements for the particular quarter, and the total steel available for allocation to new merchant ship construction. The individual allocations necessarily fluctuated from quarter to quarter and the system ensured that as far as possible each shipbuilder received a fair share of the total steel available for allocation. It followed that the total of the allocations made for new shipbuilding to Clyde shipbuilders showed variations in both directions from quarter to quarter. Mr. Edwards said he was aware that a number of steelworkers had been paid off in one Clyde shipyard, but he had no information of any immediate downward trend in employment in the shipbuilding yards on the Clyde.

Payments to the Steel Industry

MR. PIRATIN asked the Minister of Supply why the iron and steel industry was paid a subsidy of £7,500,000 during 1947-48; and to whom and how this sum was disbursed.

In his reply, MR. G. R. STRAUSS said that payments amounting to about £11,500,000 were made from public funds in 1947-1948 in respect of the following:—(*a*) The difference between the pre-war cost of freight on foreign ore plus 50 per cent. and the cost of such freight at present; (*b*) the difference between the cost (including freight charges and import duty) of imported steel and the controlled price in the U.K.; (*c*) uneconomical production of home ore; and (*d*) the difference between the cost of imported scrap (including freight) and the controlled prices in the U.K.

The Minister said that payments in the case of (*a*) and (*b*) are made to the British Iron & Steel Corporation, Limited, which handles the transactions as agents of the Ministry of Supply. Payments under (*c*) are made to the firms mining the ore. Transactions under (*d*) appear in the accounts of Iron & Steel Disposals, Limited, which is a Government-owned company.

More Steel for Ships

In the House of Lords on September 22, during a debate on the recent defence statement, LORD TEYNHAM urged that the Government should reconsider the allocation of steel to the shipbuilding industry. Replacement of the merchant fleet was delayed owing to the steel allocations, he said. One of the largest firms received only 40 per cent. of its maximum steel requirements, which had a great effect upon the time of delivery.

United States' Part in World Steel Production

Big Domestic Demand

With world steel production back to the 1937 annual rate of about 136,500,000 metric tons, the United States now accounts for 56 per cent. of the total, against 38 per cent. before the war. The U.S.A. is now producing 50 per cent. more steel than in 1937, but, as far as world supply is concerned, the increase is offset by decreases elsewhere, notably in Germany and Japan.

It has been pointed out by the U.S. Department of Commerce that a direct result of the post-war steel situation has been the great dependence of other countries upon the United States for steel. The demand for steel is so great in the United States that more than the entire current production could be used domestically, but in view of the importance of steel in world reconstruction, the U.S.A. has adopted export controls to strike a balance in supplying foreign and domestic needs in the light of current supplies. In 1947, it is stated, the U.S.A. exported 5,900,000 metric tons of steel. Because of increased domestic needs, exports for the first part of 1948 have been at the annual rate of about 4,700,000 metric tons, being more than twice the amount of pre-war steel exports.

As for iron and steel imports, the United States had to purchase certain types abroad, but present tonnages are quite small compared with pre-war years. Excepting pig-iron, ferro-alloys and ferrous scrap, they amounted to only 30,576 metric tons in 1947, compared with 436,800 metric tons in 1929. Most of the steel imports came from Canada and Mexico. The chief European source was Sweden, whose steel exports consisted almost entirely of special steels required by U.S. toolmakers and cutlers.

Personal

MR. J. A. PEACOCK has been appointed chief engineer of John Lysaght's Scunthorpe Works, Limited.

MR. J. C. G. COSSEY has resigned from the board of the A.B.C. Coupler & Engineering Company, Limited.

MR. R. COPLETON has been appointed a director of David Flanagan, Limited, brassfounders and finishers, of Irvine, Ayrshire.

MR. ARTHUR E. HIGGS has been appointed a director of the National Smelting Company, Limited, with effect from October 1.

MR. W. E. WYNNE has been appointed South Wales agent for the sale of the compressed-air products of the Atlas Diesel Company, Limited, Wembley.

MR. A. PREECE, Reader in Metallurgy at Leeds University and president of the Leeds Metallurgical Society, is leaving Leeds to become Professor of Metallurgy at King's College, Newcastle-upon-Tyne.

MR. JOHN W. CRAGGS, chairman and managing director of Robert Bowran & Company, Limited, manufacturers of white bronze and anti-friction metals, etc., of Pelaw-on-Tyne, has been adopted Liberal candidate for the Wallsend Parliamentary Division.

MR. J. P. HAMILL, MR. W. R. COX and MR. G. F. WATTEARS, with the approval of Mr. R. G. Leach, receiver and manager, have accepted an invitation to join the board of Richard Crittall & Company, Limited, heating and ventilating engineers, of Brentford, Middx.

MR. A. D. MACKELLAR, Clydeside divisional organiser of the Association of Engineering and Shipbuilding Draughtsmen, has accepted the invitation of the President of the Board of Trade to become a director of Scottish Industrial Estates, Limited. The post is an honorary one.

MR. AMBROSE CALLIGHAN, who recently retired from the secretaryship of the National Union of Blastfurnacemen, Ore Miners, Coke Workers and Kindred Trades, and who is now a member of the Steel Board, was presented at a dinner at Middlesbrough with a silver cigarette case and lighter by the Union. Mrs. Calligan received a platinum and diamond ring.

MR. AND MRS. WILLIAM ANTHONY HOMER have celebrated their golden wedding. Mr. Homer has spent 60 years in the business of Anderson & Homer, Limited, iron and brass founders, of Walsall, which was founded by his father. He has been the principal of the firm since 1924 and the governing director since it was formed into a limited liability company five years ago.

MR. ALAN LIVESEY STUART TODD has been appointed successor to the late Mr. W. F. Garner as Director of the National Association of Drop Forgers and Stampers. Mr. Todd, who is 48, was educated at Wellington College, Berks, and Magdalen College, Oxford; he is a barrister-at-law, Inner Temple. He was M.P. (Unionist) for the Kingswinford Division of Staffs from 1931-35. During the war, he held the posts of Regional Officer and Assistant Principal of the Ministry of Home Security (Midland Region) and in 1946 he became Assistant Regional Controller of the Board of Trade, Midland Region.

Changes of Name

The following companies have recently changed their names, the new titles being given in parentheses:—

B.L.W. MOTORS, LIMITED, London, W.10 (Millers Aluminium Products, Limited).

JOE HOLMES (METALS), LIMITED, Bradford (Barclay, Empsall & Company, Limited).

BURTON ENGINEERING COMPANY (BOSTON), LIMITED (Fisher Clark Engineers, Limited).

B. & S. CONSTRUCTORS, LIMITED, Birmingham (B. & S. (Welded Fabrications), Limited).

FRED MELLOR (LONDON), LIMITED, ironmongers, engineers, etc. (Kerr & Lockwood, Limited).

CASTOR FOUNDRY & MANUFACTURING COMPANY, LIMITED, London, S.W.1 (Northfield Foundry, Limited).

WESTINGHOUSE TICKET MACHINE COMPANY, LIMITED, London, N.1 (Westinghouse Garrard Ticket Machines, Limited).

R. V. COATES (LEEDS), LIMITED, lead-sheet, pipe and metal and machinery merchants, etc. (Coates (Leeds), Limited).

COLMANS OF DARLINGTON, LIMITED, manufacturers of fireplaces, stoves, etc., of Darlington (Snip Lines, Limited).

TUNGSIT ELECTRO-METAL WORKS, LIMITED, Cheapside, London, E.C.2 (Hardfacing Alloys (London), Limited).

FULCHER-SCHULER ENGINEERING COMPANY, LIMITED, Ulverston (South), Lancs (Fulcher Engineering Company, Limited).

VITTORIA BRASSFOUNDRY COMPANY, LIMITED, Birmingham (Vittoria Brassfoundry & Engineering Company, Limited).

R. F. BAKER (WEST BROMWICH), LIMITED, constructional engineers, etc. (W. E. Sutton & Company (Engineers), Limited).

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained.

Depwade, October 6—About 6 miles of 4-in. and 3-in. cast-iron pipe, for the Rural District Council. A. P. I. Cotterell & Son, 54, Victoria Street, London, S.W.1. (Fee £2 2s., returnable.)

Godalming, October 9—Supplying, laying and jointing 208 yds. of 6-in. dia. spun-iron water main and specials, 1,450 yds. of 4-in. spun-iron main, and 485 yds. of 3-in. main, for the Corporation. Mr. C. B. Spivey, water engineer, Municipal Buildings, Bridge Street, Godalming. (Fee £2 2s., returnable.)

Thrapston, October 25—18 miles of spun-iron water main, 6-in. to 3-in. dia., for the Oundle and Thrapston Rural District Council. Pick, Everard, Keay & Gimson, 6, Millstone Lane, Leicester. (Fee £2 2s., returnable.)

Truro, October 6—Construction of cast-iron water mains, for the Rural District Council. Mr. R. W. Barratt, clerk, Rural Council Hall, River Street, Truro. (Fee £2 2s., returnable.)

News in Brief

AS FROM SEPTEMBER 25, the address of B.I.S.C. (Ore), Limited, has been changed to 9, St. Helen's Place, London, E.C.3 (telephone: London Wall 6661).

THE Engineering, Equipment and Materials Exhibition will be held at the Old Horticultural Hall, Vincent Square, Westminster, London, S.W.1, from January 26 to February 9, 1949.

CONTRACTS ON export account for telephone equipment received during July by the General Electric Company, Limited, included over £90,000 of equipment for Australia and New Zealand, more than £18,000 for Egypt, and £115,000 for Singapore.

AN ORDER FOR a cargo/passenger oil-fired steamer of about 12,000 tons has been placed by Cunard White Star, Limited, Liverpool, with Swan, Hunter, & Wigham Richardson, Limited, Wallsend-on-Tyne.

THE WEAR COMMISSIONERS have granted an application by Sir James Laing & Sons, Limited, shipbuilders, to place five concrete blocks on the bed of the river to act as foundations for a derrick crane to serve the "B" berth.

THE BOARD OF TRADE has announced that from September 27 the manufacturers' maximum prices for cast-iron domestic hollow-ware have been increased by 5 per cent. Prices in the shops have been increased by ½d. in the shilling.

NEW STEEL GATES for its No. 5 dry dock are to be built by the Blyth Dry Docks & Shipbuilding Company, Limited. The dock floor is also to be lowered about 18 in. The improvements are part of a general modernisation scheme in progress at the works.

THE GRANT of a Charter of Incorporation to the Institution of Municipal Engineers has been approved by the King. Members and associate members of the chartered institution will be entitled to the designation "chartered municipal engineer." Mr. C. Greenwood, city engineer of Chester, is the first president of the chartered institution.

ORDERS RECEIVED recently by the North British Locomotive Company, Limited, Glasgow, include one valued at more than £1 million for 50 steam locomotives for the Government of Victoria (Australia), one of approximately £1,750,000 for 40 electric locomotives for the South African Railways and one for 40 steam passenger and freight engines for British Railways valued at approximately £600,000. The company is also reported to be receiving part of a £2,000,000 locomotive contract for the Indian Government.

Argentina Orders British Rails

Orders for 250,000 tons of steel rails and fishplates have been placed by the Argentine Government with British manufacturers. The orders were placed by the Argentine Government through its Purchasing Commission in London. The United Steel Companies, Limited, will be responsible for a large part of the orders; it is estimated that they are worth about £6 million. Deliveries will be spread over a period of six years.

It is stated that firms on the North-East Coast, Scotland, and South Wales will benefit from the orders.

Application of Research

Turning Results to Practical Ends

Mr. Herbert Morrison, Lord President of the Council, expressed concern at the slowness with which research is turned to advantage, when he opened a conference on biology and civil engineering organised by the Institution of Civil Engineers last week. Now, more than in the past, we were becoming more aware of the danger of over-specialisation and of the need for the co-ordination of the various branches of scientific knowledge, he said. There was a consensus of opinion, recently voiced by Sir Henry Tizard in his presidential address to the British Association, that what we needed, primarily and on a short view, was the practical application of existing scientific knowledge. The first stage was to put the results of research into effect more quickly in the mines, the factories, and the countryside.

The speaker said that we were in danger of getting more research than we were absorbing. Either we must control the flow of research and make it somewhat selective, or, if we let it go ahead, we must somehow fashion a means of absorbing results and turning them to practical ends quicker than industry, and possibly the Government as well, was doing at the present time. There would be no place for fossilised minds in the world of the next 20 to 50 years.

Recent Wills

HERON, G. M., for over 50 years with Mackenzie & Moncur, Limited, ironfounders, etc., of Edinburgh £4,193

MINTON, J. C., chairman and managing director of Charles Harbage, Limited, rolled-metal manufacturers, of Birmingham £22,381

ANDERSON, W. T., a director of the Anglo-Burma Tin Company, Limited, British American Tin Mines, Limited, Geevor Tin Mines, Limited, Thailand Tin Mines, Limited, and other companies £234,561

WAWN, T. N., a partner of M. Wawn & Son, consulting engineers and propeller makers, of Sunderland, a founder member of the Society of Consulting Marine Engineers and Ship Surveyors, and a member of the North-East Coast Institution of Engineers and Shipbuilders £52,040

LIVESEY, ALFRED, chairman and managing director of Henry Livesey, Limited, textile engineers, of Blackburn, chairman of Livesey & Crowther, Limited, textile-machinery manufacturers, of Manchester, chairman and a director of Henry Halstead & Sons, Limited, bolt and nut manufacturers, of Blackburn, and other companies ... £46,582

American Steel Output Record

The American Iron and Steel Institute announces that U.S. steel production for the first eight months of 1948 reached a new peacetime record of more than 57,500,000 tons of ingots and steel for castings, output being 1,645,000 tons higher than in the corresponding period of last year. The Institute adds that, if the current rate of output is maintained over the next four months, the year's production will reach a new high level at 87,000,000 tons.

Production in August was 7,417,599 tons, compared with 6,991,152 tons in August, 1947. Steelmaking furnaces were operating at 92.9 per cent. of capacity during the month.

Company News

(Figures for previous year in brackets.)

Vickers—Interim dividend of 4% (same).

Thomas Blackburn & Sons—Dividend of 10% (same).

Qualcast—Final dividend of 40%, making 60% (same).

Monotype Corporation—Interim dividend of 5% (same).

A. Reyrolle & Company—Interim dividend of 5% (same).

British Aluminium Company—Interim dividend of 4% (same).

John G. Kincaid & Company—Interim dividend of 3% (same).

Peter Brotherhood—Final dividend of 12%, making 20% (same).

British Thermostat Company—Interim dividend of 7½% (same).

Bede Metal & Chemical Company—Interim dividend of 6¼% (same).

Clifford Motor Components—Final dividend of 22½%, making 30% (same).

Vaughan Bros. (Drop Forgings)—Final dividend of 10%, making 20% (same).

Netherlands Blast Furnaces & Steel Factories—Dividend of 8% for 1947-48, against 6%.

Farrow & Jackson & Purdy—Final dividend of 10% (same) and special bonus of 3% (nil), making 19% (16%).

Albright & Wilson—Interim dividend of 10% to holders on the register at September 14. The company was made public last March.

A. C. Cossor—Consideration of the payment of the dividend on the 6% preference shares in respect of the year ending March 31, 1949, has been deferred until the accounts for the full year are available.

Cowans, Sheldon & Company—Net profit, after depreciation, taxation, etc., for the year ended June 30, £32,310 (£25,794); dividend of 15% (same); to general reserve, £17,500 (£12.500); forward, £64,835 (£62,400).

Sydney S. Bird & Sons—The directors announce that they do not feel justified in paying an interim dividend on account of the year to December 31, 1948. For 1947 an interim of 15% was followed by a final dividend of 15%.

Lang Bridge—Profit to June 30, after charging £1,344 (£2,511) for deferred repairs executed during the year, £21,780 (£10,319); to directors' fees, £750 (£834); depreciation, £1,312 (nil); taxation, £10,205 (£5,627); general reserve, £5,000 (£7,000); dividend of 10% (same); forward, £3,376 (£1,477).

Eustace Watkins—The directors have decided to defer consideration of a dividend on the ordinary capital until trading results for the year ending March 31 next are available. Last year an interim dividend of 10%, plus a 25% tax-free dividend from capital profits, was followed by a final dividend of 30%.

Bylock Electric—Following an announcement to the effect that they intend to pass the interim dividend, the directors have stated that they do not consider that they will be able to recommend a final dividend for the year ended July 31, 1948. For 1946-47 an interim of 100% was followed by a final dividend of 200%.

Lochgelly Iron & Coal Company—Second interim dividend of 10%. A first interim dividend has already been paid, and it is not intended to recommend a further dividend on the ordinary shares for the year. The decision to pay the second interim dividend has been made because of the delay in completing consolidated accounts for the year to May 31 last, due to the requirements of the Companies Act, 1948. For the year to May 31, 1947, an interim of 5% was followed by a final of 10% and a bonus of 5%.

Obituary

MR. ALBERT HICKEY, who was managing director of J. Hickey & Sons, Limited, boilermakers, of Richmond, Surrey, died suddenly on September 18.

MR. WALTER FINNEY, joint proprietor of A. Finney & Company, engineers and machinery merchants, of Birmingham, died on September 16. He was 77 years of age.

MR. ADAM ROY MACGREGOR, a partner in the firm of P. & R. Fleming & Company, iron and steel stockholders, structural engineers, etc., of Glasgow, died suddenly on September 17.

MR. ALBERT WILLIAM HIGGS, a director and works manager of Samuel Hodge & Sons, Limited, combustion engineers, etc., of Rainham, Essex, died on September 3 as a result of a motoring accident.

ADMIRAL SIR HENRY HARVEY BRUCE, who died in London on September 14 at the age of 86, has been described as the father of the naval dockyard at Rosyth, of which he was superintendent from 1915 to 1920. During this period the dockyard was developed into the most up-to-date, if not the largest, of the fleet bases.

MR. VILHELM FREDERIK HJORT, formerly a director of United Water Softeners, Limited (now the Permutit Company, Limited), died recently at the age of 73. In partnership as Lassen & Hjort, water-softening engineers, until 1913, when he helped to form the present company, Mr. Hjort retired from the board in 1929 to return to his native Denmark.

Gazette

G. W. ROBINSON & COMPANY (COVENTRY), LIMITED, engineers, etc., of Byfield, Northants, is being wound up voluntarily. Mr. A. S. Hill, 3, The Quadant, Coventry, is the liquidator.

MR. R. E. CLARK, 17, Albion Street, Hanley, Stoke-on-Trent, has been appointed liquidator of the Saxon Engineering Company, Limited, by special resolution of the members of the company.

MR. T. J. M. MACLEOD (with a committee of inspection), 4, Bucklersbury, Cheapside, London, E.C.4, has been appointed liquidator of S. B. Jackson, Limited, manufacturing electrical engineers, of Windsor House, Victoria Street, London, S.W.1.